

**PERCEIVED INFLUENCE OF INFORMATION AND  
COMMUNICATION TECHNOLOGY ADOPTION ON TEACHER  
PERFORMANCE IN PUBLIC SECONDARY SCHOOLS IN  
EMUHAYA SUB-COUNTY, VIHIGA COUNTY.**

**ODEDE WYCLIFFE OJINA**

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# DECLARATION

## DECLARATION

This research project is my original work and has not been presented for a degree in any other University or for any other award

Signature .....

Date.....

ODEDE WYCLIFFE OJINA

D61/70990/2014

## APPROVAL BY SUPERVISOR

I confirm that the work presented in this project was carried out by the candidate under my supervision

Signature .....

Date.....

DR.MERCY FLORAH OLUOCH

DEPARTMENT OF BUSINESS ADMINISTRATION,  
SCHOOL OF BUSINESS.

## **DEDICATION**

This project is dedicated to my beloved father, Chief Washington Odede Mayabi (late) for giving in all his to ensure I get education. Papa your love and blessing I will never forget forever. And also my granddaughter Splendour Kahura because the future belongs to her.

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## **ABSTRACT**

Integration and infusion of ICT into teaching and learning process is increasingly rising in many learning institutions. There is enough evidence that incorporation of ICTs in the delivery of the curriculum has a significant contribution to the teaching and learning. However, teachers' perception on integrating ICT in teaching-learning process is considered a key factor in attainments of full benefit of use of ICT in teaching and learning. This study examined the influence of teacher perception on ICT on teacher performance in Emuhaya , Sub-County. A descriptive cross sectional survey method was adopted in the study. A stratified sampling technique was used in selecting teachers from each level of the school. Close-ended questionnaire which were self-administered, were used to collect the data from the sampled teachers. A sample of 104(25%) was drawn from a target population of 416 TSC teachers from 37 public secondary schools in Emuhaya. Out of 104 questionnaires administered, 84 (80%) responded. Data was analyzed using SPSS software. Measures of central tendencies that is mean, variance and standard deviation and t-test were employed, to get the relationship between teacher perception of ICT and teacher performance. The findings have been represented using tables for ease of understanding. The findings of the study revealed that teachers in Emuhaya had moderately adopted use of ICT in the curriculum implementation and most teachers perceived ICT to have high influence on teacher performance. It was suggested that an ethnographic study focusing on how well teachers utilize ICT in teaching and also other similar studies should be carried out in other parts of the country to gather adequate information on ICT adoption, for generalization to be made. From the study it is recommended that Ministry of Education and TSC should ensure that all secondary schools teachers receive relevant training to provide them with appropriate knowledge and skills to effectively adopt use of ICT.

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## **ABBREVIATIONS AND ACROYMS**

<b>B.O.M</b>	Board of Management
<b>HRM</b>	Human Resource Management
<b>ICT</b>	Information and Communication Technology
<b>K.C.S.E</b>	Kenya Certificate of Secondary Education
<b>KNBS</b>	Kenya National Bureau of Statistics
<b>KNEC</b>	Kenya National Examination Council
<b>M.D.Gs</b>	Millennium Development Goals
<b>MOEST</b>	Ministry of Education, Science and Technology
<b>NEPAD</b>	New Partnership of African Development
<b>T.S.C</b>	Teachers Service Commission
<b>UNESCO</b>	United Nations Educational Scientific and Cultural Organisations

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

Accelerated developments in Information and Communication Technologies (ICTs) continue to influence socio-economic development in the world according to Richards (2008). ICT refers to technologies that provide access to information through telecommunication. It includes the internet, wireless network, cell-phones and other communication medium. ICT is generally accepted as a modern instrumental tool that enables educators to modify the teaching methods they use in order to increase their performance. Increasing performance is one of the key crucial goals in a firm as identified by Wright (2000). However, advancement in technology have been with a lot of controversies due to perception of automation as an affront to human resource and requisite skills for integration in most profession inclusive of teaching as noted by Okumbe (2004). Performance is concerned with the quantity or volume of work that is being produced in terms of how much and how well as pointed out by DeCenzo and Robbins (2006). It is one of the measures used in measuring human resource output. There is ongoing debate over how best to measure teacher performance as pointed out by Harris (2008). Since teachers' estimated effects on student test scores (value-added) can be used to deduce teacher performance, hence teacher subject score in terms of mean score and quality grades in a given test can be used to measure the performance.

This study was anchored on the theory of diffusion of innovation by Rogers (2007) which looks at adoption of technology in an organization and theory of reasoned

action developed by both Fishbein and Ajzen (1980) which they argue that the intention to do a given behavioral task is a function of perception and norms.

Most of the schools in Emuhaya sub-county have been performing poorly in K.C.S.E examinations, KNEC Report (2016). In fact, only three schools out a total of 37 schools managed to get a mean of seven and above in the 2016 K.C.S.E results with majority of the schools attaining a mean of five and below, Education office Emuhaya (2017). These have partly been attributed to the fact that most of the schools Most of the schools have poor ICT Infrastructure.

### **1.1.1 The Concept of Perception**

Perception is the process by which individuals select, organize and interpret stimuli to make sensible meaning out of it, Assael (2004). According to Harold (1978) the process of several interrelated activities which results in the individual giving meaning to the surrounding from experience is what perception is all about. Hence individual view the same thing in the different ways. Fishbein and Ajzen (2005) assert that perception as a learned predisposition to respond to an object or an issue in their positive or negative manner. On the other hand, adoption of ICT influences teacher performance. However teacher perception can accelerate or slow down changes in infusion of ICT in teaching practices, teachers attitude towards technology influence their acceptance of usefulness of the given technology, its infusion into teaching process, as asserted by Boater (2013).

Liaw (2007) asserts that teachers attitude towards technology influence their acceptance on the use of the technology. Therefore this perception is the teachers attitudes or state of mind or feelings towards the influence of ICT on the performance of teachers. According to Ajzen (2005) teachers' perception about ICT could

objectively be true or mere speculations or stereotypes. This could be due to one's gender, education or even socialization personality. According to Carington and Robinson (2010) positivity towards computers relate with teacher usage of ICT in teaching. Teachers are therefore viewed as doorkeepers in accepting innovations to diffuse into the classroom, hence a crucial factor in determining ICT adoption in teaching.

### **1.1.2 Concept of Information and Communication Technology**

There is no universal agreement on the definition of ICT, as these technologies evolve almost daily. In this study, ICT includes but not limited to, personal computers, laptops, printers, LCD projectors, palm devices, iPods, fax machines, cell phones, Internet and Intranet UNESCO (2002). This includes the ability to use technology as tool to conduct research, evaluate and communicate information, UNESCO (2002). Its general definition covers any product that can store, retrieve, manipulate, send or receive information electronically in a digital form, as noted by World Bank(2002). However, there have been misconceptions that ICT generally means computers and computer related activities even though computer and its application plays vital role in modern Information and Communication Technology. According to Cuttance (2001), ICT is a generic term applied to those technologies that are used in collecting, storing, editing and passing data in various forms. Toomy (2001) argues that ICT encompasses hardware, software and internet connectivity of which Information Technology makes a minor part.

Toomey (2001) believes that the broader term "ICT" encompasses aspects such as electronic technologies, online technologies and computer technologies and it

includes use of computers and CD-ROMS and internet facilities, with one main component of ICT being the computer. However, it is the incorporation of ICT in teaching that is key to this study. The computer use is defined as ways in which teachers work with computers in the instruction of their learners either through computer-aided learning or computer managed instructions.

### **1.1.3 Concept of Employee Performance**

At the core of all human resource policy decisions is the issue of how to measure employee performance. Babalola (2009) asserts that a teacher is a human resource in a school entrusted with imparting knowledge and skills in a learning process to the learner. Performance is a term from industrial age which implied to increase the rate of output. It is a measure of how well a mechanism or process achieve its aims. However, this definition of performance does not fit all circumstances. Aaronson (2007) says performance makes one to a complete a task using fewer resources in terms of time and inputs. For instance, teaching more students in less time by virtue of using tools. Performance is the quantity of major product that an organization or individual provides, Derenzo (2006). Teacher performance is the ability of a teacher to promote student achievements, Harris (2008). Recent studies of determining teacher performance continue to use the value of test score approach, as indicated by Aaronsum (2007). According to Rollei (2000) educational performance is the efficient production of educational outcomes. A performing teacher is able to improve students' skills, Duffield (2001).

Similarly, Okeke (2004) and Robbins and Derenzo (2009) portend that a performing

teacher is one who achieves high student success with proper management of resources.

Babalola (2009) presents performance indexes for the teacher that is working with speed and accuracy in knowledge acquisition and dissemination to produce excellent results. Measuring performance is a multi-dimensional concept. Effectiveness and efficiency are the two fundamental dimensions of performance (Adam's et al, 2002). Teachers' estimated effects on student test scores (value-added) can be used to deduce teacher performance.

In this study, teacher performance was measured based on teacher self-evaluation on syllabus coverage, teacher content delivery, professional document preparation and learner assessments and evaluation.

#### **1.1.4 Public Secondary Schools In Kenya.**

There are 4,302 secondary schools in Kenya of which 3,661 are public and 641 are private according to MOE (2015). Public schools are financed by government and or local community and managed through Board of Management .They are categorized as national, extra-county ,county and sub-county schools. Most of the public schools were founded by churches(sponsors) that is the church contributed the initial land for construction. This schools majorly offer 8-4-4 sytem of education. And at the end four years in secondary school the learner is subjected to the Kenya Certificate of Secondary Examinations to enable the learners to join university and middle level colleges.Majority of the teachers in secondary schools are employed by teachers service union although others are employed temporarily by the respective schools

board of management to cater for deficit. Currently the Secondary School teachers employed by TSC is about eighty thousands spread in the entire country.

Even although some of this public secondary schools have adopted ICT in teaching, Kenya level of infusion is still low (UNESCO,2015). According to Kenyan education policy on ICT is hinged on three policies namely; e-Government Strategy, National ICT Policy and Sessional Paper No.1 of 2005. National ICT Policy emphasizes on infusing ICT in teaching curriculum at all levels of education towards human resource development to enable the country achieve the social pillar of vision 2030 and to realize Education For All and Millennium Development Goals.(MOE,2005). Therefore Kenya Institute of Curriculum Development has digitized secondary school syllabus and put some subjects' topics on CDs and DVDs. NEPAD e-school programmes aims at infusing ICT teaching in order to ensure access, quality and equity in education and better teacher performance.

Emuhaya Sub-County is found in Vihiga County comprising of 37 public and 1 private secondary schools. Emuhaya is subdivided into four educational zones; West, North, East and South. According to TSC teacher directory (2015), the sub-county has only 416 TSC teachers; meaning that majority of the schools is understaffed with overcrowded classes. Most of the schools in the sub-county have been performing poorly in the K.C.S.E examinations, KNEC Report (2016). In fact, only three schools managed a mean of seven and above in the 2015 KCSE results with majority of the schools having a mean of five and below, Education office Emuhaya (2016). These poor performances have partly been attributed to the fact that most of the schools have poor ICT Infrastructure.

## **1.2 Research Problem**

Rapid growth and improvement in Information and Communications Technology (ICT) have led to the diffusion of technology in education. Integration and infusion of ICT into teaching and learning process is increasingly rising in many learning institutions. Teachers' perception on integrating ICT in teaching-learning process is considered a key factor in attainments full benefit of use of ICT in teaching and learning has argued by Adeyinka (2007).

Several research findings in the recent years provide enough evidence that incorporation of ICTs in the delivery of the curriculum has meaningful contribution to the teaching and learning in various subject areas. However, this has not been realized in Emuhaya Sub-County, Vihiga County. Although there is considerable evidence that many of the secondary schools in the sub-county have reasonable investment in ICT, they have continued to post poor performance in KCSE (KNEC, 2016 and KNBS, 2012) reflecting low teacher performance.

Research findings by Albirini (2006), Dexter (2002) Becta (2001), Kulik (2003), IEA (2008) and Wabuyele (2006) provide enough evidence that incorporation of ICTs in the delivery of the curriculum has meaningful contribution to the teaching and learning in the various subject areas. However ,other studies by Empirical (2005), Trucano (2005), Cox & Marshal (2007) and Ang'ondi (2013) held a contrary opinion, While other prior studies on ICT like Kamau (2012) and Abuyeka (2013) focused on constrains of adoption in Nyandarua and the impact of teaching Kiswahili in Kakamega respectively. They failed to look at intended outcome of ICT on human resource that is performance improvement.

Some of the above mentioned studies were done in developed countries, while those conducted in Kenya were carried out in different localities that are not Emuhaya Sub-county. Also there is an empirical mixed result that is no consensus on earlier researches findings that have been done on perception of ICT influence on performance. No evidence indicates that a study has been done to establish the influence of the teachers' perception on ICT on teacher performance in Emuhaya Sub-County, Vihiga County. Therefore this study intends to fill this gap. By finding out what is the perceived influence of ICT adoption on teacher performance in public secondary schools in Emuhaya Sub-county, Vihiga County?

### **1.3 Research Objectives**

The objective of this study was to establish the perceived influence of ICT adoption on teachers' performance in the public secondary schools, Emuhaya Sub-County.

### **1.4 Value of the Study**

It was expected that the findings of this study would provide insights and understanding on teachers' perception on the use ICT and its influence on performance. This information could enable school board of managements and principals to appreciate the need to fully incorporate the use of ICT in their school curriculum. It may help them to effectively incorporate ICT adoption programmes in their school plans and invest more on ICT infrastructures to enhance teacher performance.

It was also expected that the findings of the study would provide valuable information to government of Kenya through Ministry of Education in formulation of policies on ICT programs in school curriculum. They could help the government to make informed decisions and come out with clear policies on ICT adoption in public school. Lastly, the findings of this study should be able to contribute to knowledge developments in understanding of the role of ICT and teacher performance, which is useful for further studies and research in this field. It expected to enrich ICT adoption theories like diffusion of innovation and theory of reasoned action.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter described reviewed literature globally, internationally in Africa and in Kenya, on the influence of influence of ICT adoption on teacher performance in public secondary schools. The highlights were organized according to research objectives. On the basis of this, research gaps were identified so as to generate the scope of the study.

### **2.2 Theoretical Foundations**

The study was guided by the interplay of two theories; diffusion of innovation (IDT) and reasoned action theory (TRA). Whereas (TRA) looks at how norms/attitude affect diffusion of innovation hence helps to identify how and where to target strategies for changing behaviour while IDT looks at stages of the innovation process hence helps in to understand process of change and how to potentially to affect change in terms of creating an intent to change and translating an intent into action. Therefore according

to TRA, categorization of how people adopt to innovation as is in IDT can be argued to be how their attitudes/perception is shaped(intention).

### **2.2.1 Diffusion of Innovation Theory(IDT)**

Diffusion innovation theory was propagated by Rogers (2007), who says that diffusion is the process by which an innovation is communicated through certain channel over time among the members of the social systems. Hence, innovations diffusion is a process that takes time to occur. It provides a context in which one looks at uptake and effects of ICT in a given period.

It is a general model which helps in understanding more about the diffusion process. It enables to understand process of change and how to affect change. It guides on strategies on creating an intent to change and turning an intention into action. According to this theory the knowledge about ICT is important hence teachers need the usage of the technology in their curriculum instruction for value addition.

### **2.2.2 Theory of Reasoned Action (TRA)**

The Theory of Reasoned Action (TRA) was propagated by both Fishbein and Ajzen (1980) in which they argue that intention to carry out a given behavioral task is determined by both the attitude and the norm. The theory highlights on attitudinal behavior relating to accepting, using and adopting of a given technology in an organization.

The theory holds on the idea that a person's voluntary behavior is determined by ones attitude towards that behavior and how one thinks other people near him will view the behavior if he acted/performed the behavior. According to Oliviera (2006), the people decide to perform a given behavior even though they differ in view with it but its

effects, since they want to please the society/people. This theory resonates with the current study in that teachers' attitudes are very important in adoption of ICT in curriculum. It is premised that teachers with positive attitudes towards ICT are likely to embrace adoption of ICT in curriculum.

### **2.3 Perceived ICT Adoption and Teacher Performance.**

It has been noted by several scholars that rapid growth in ICT has led to pervasiveness of technology in all professions including teaching, however there have been mixed empirical results on perceived benefits of ICT on performance. Empirical review presents various studies that have been done on secondary school education, ICT and teacher performance. ICT can limit or bolster performance, even highly trained and committed employee will be unproductive when provided with poor tools to perform their mandate. Sullivan (2011) holds that in an era where technology is pervasive in almost every function, absence of technology can reduce performance. According to Rogers(2007) peoples' attitudes/ perceptions toward a new technology is crucial factor in its adoption.

The research by the International Association for the Evaluation (IEA) of educational achievements on the influence of ICT on the teaching in over twenty six nations, found that ICT infusion in teaching increases educational performance, UNESCO (2008). The research observed the adoption of computers in teaching by sampling teachers in institutions. The research concluded that ICT infusion in teaching increased teacher performance. Still on global scene, a study by Albirini (2006) in Syria on social studies teachers' perception on the ICT benefits on teaching results had a strong positive correlation. Another study by Dexter (2001) in U.S.A on teacher

perceptions on the impact on classroom practice established that majority of the educators viewed ICT as adding value in their teaching. Also studies by Becta (2002) and Kulik (2003) concur that there is a positive effect of the use of ICT on performance.

On African context, according to a survey of seven hundred teachers that was carried out in Nigeria by Adeyinka (2007) to investigate teachers perceptions on merits of innovations in teaching, found that teachers had positive attitude towards ICT influence on teaching. On home front KIE (2002), a survey done by the Kenya National Examination Council showed that learners' performance in Biology was wanting due to absence of use of ICT in teaching. On the same note, a study on the use of computer in teaching biology, on improving students understanding and perception of the cell theory in Kenya by Ndirangu established that the use of the computer tend to improve scores, Ndirangu (2006). Similarly, Wabuye (2000) studied teachers' perceptions toward computer use in Kakamega, Kenya and established that majority of the educators' perceived use of computers positively. Also Momanyi (2006) study pointed out that teachers perceived ICT to improve the learning process thus enhancing teacher productivity. Closure home is Ochanda and Indoshi (2011) in a study on the perception of teachers in Emuhaya on benefits of calculators in teaching, most of the teachers were positive.

In other prior studies whereas Kamau (2012) in his study looks at constrains in the use of ICT in teaching in Nyandarua while Abuyeka (2013) examines integration of ICT in teaching and learning of Kiswahili in Webuye, Kenya. They both fail to look at the intended outcome of ICT on human resources that is performance. However, in contrast at global scene is study by Empirica (2006) who explored perception of use

of ICT in the European schools. He looks data from 25 European countries and concludes that there is no clear influence of ICT on the educational outcome. However, he does not look into student results hence impossible to tell the influence of ICT adoption on performance.

Another study by Trucano who carried out a number of researches on effect of ICT on schools in Asia, concludes that the effect of ICT influence on teaching is ambiguous. Also Cox and Marshalls (2007) point out that ICT researches and indicators do not give clear effects on performance. Also it was observed that there is little theoretical and empirical evidences in favour of expected merits accruing from the application of ICT in schools since different studies find contradicting or mixed results, Leveun *et al* (2004).In Kenya, according to the study done by Ang'ondi (2013) on a number of teachers on ICT usage across Kenya, it was noted that ICT was perceived as an additional liability in teaching. Also, Wanjala, Khaemba and Mukwa (2011) on a study on the factors that are crucial in infusion of ICT in a teaching in Bungoma, Kenya, revealed that educators had negative attitude towards the use of ICT.

It is evident that there is mixed results from the empirical studies that have looked at the perception of teachers on ICT influence and teacher performance in schools. Hence there have been no clear consensus in the literature review on the perception of benefits of ICT and performance. Also the very many studies employed varied methodologies in their researches and were in different context that is the teacher perception then and now could have changed so is the level of ICT adoption.

## **2.4 Summary of Literature Review and Knowledge Gaps**

The reviewed literature did not adequately address appropriately the influence of adoption of ICT on teacher performance in schools. Though the studies done by Albirini, Dexter and AEA were very important to the proposal study, they were carried out in developed countries and were mostly based in science based subjects. It is also noted that there was no consensus amongst different empirical studies on the influence of ICT on performance. Whereas Albirini (2006), Dexter (2002), Adeyinka (2007), Wabuyele (2006) and Momanyi (2006) in their respective researches were of positive findings on ICT influence on performance, on the other hand Trucano (2002), Empirica (2005) and Ang'ondi (2013) were of negative findings on benefits of ICT on performance. Therefore no consensus hence need for a new study to determine the relationships on these variables under the study.

While Kamau (2012) and Abuyeka (2013) research both although conducted in Kenya and on ICT, they failed to look at the intended outcome of ICT on human resources that is performance improvement. Whereas studies by Indoshi were conducted in Emuhaya Sub-County, the focus of the study was mainly centered on the use of calculators and hence failed to look at bigger aspects of ICT and its perceived influence on performance. In the case of Wabuyele (2006), Ang'ondi (2013) and Momanyi (2006) studies are relevant for having been conducted in Kenya. However, they were carried on in different localities that is not in Vihiga County and specifically not in Emuhaya Sub-county. It is evident therefore that there is mixed results from empirical studies that have been looked at perception of teachers' on ICT influence on performance in schools. There have been no clear consensus in literature review. Also the literature review did not address appropriately the influence of

adoption of ICT on teacher performance in schools. Methods including data collection tools, sample size and target population, all formed gaps of the study.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter describes the logical sequence of methods and procedures that were employed in collecting information. These include research design, sample design and sample size, data collection procedures, data analysis techniques.

### **3.2 Research Design**

The study adopted a cross sectional descriptive survey design in which data about concerned variables on the subjects were collected from a social system as found at the time of study. A descriptive survey is concerned with describing, recording and reporting of data as they exist, Kothari (2004). The research design provides the most valid and accurate answers to the research questions. This design was chosen because the researcher wants to study things that they could control, things they could not ethically or physically control. In this study, teachers' perceived influence of ICT adoption on teachers' performance have already occurred and cannot be changed by the researcher.

### **3.3 Population of Study**

Population is any group of individuals who have some features in common, Mugenda (1999). Population of the study is that population to which generalization of the study

have to be done, in this case the target population was public secondary teachers in all thirty-seven public secondary schools in Emuhaya, employed by teachers service commission. They are 416 teachers spread in these thirty-seven schools as per TSC teacher directory (2016).

### **3.4 Sample Size and Sample Design**

#### **3.4.1 Sample Size**

A sample is a subset of the target population to which the researcher intends to generalize results; Mugenda (1999). Stratified sampling was used in selecting teachers from each school according to their level. Orodho (2008) puts it that the ideal sample should be large enough to serve as adequate representation of the population and a small enough to be selected economically in terms of money and time. According to Mugenda (1999), 20 to 30 percent of the target population is sufficient to make a generalization of the study findings. In this study there was a total population of 416 teachers; the researcher used 25 percent sample translating into 104 teachers.

#### **3.4.2 Sample Design**

Sampling unit of the study were teachers. Stratified sampling was used to sample teachers based on the level/type of school; 25% of teachers per level were sampled.

**Table 1: Sampling Frame**

School Level	No. of Schools	Teachers	Sample	Percentage
National	1	48	12	25.0%
Extra-county	1	24	6	25.0%
County	5	96	24	25.0%

Sub-county	30	248	62	25.0%
Total	37	416	104	25.0%

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From the population, 25% of the teachers in the National and extra-county schools were sampled for study. However, from county and sub-county schools, 25% of the teachers in each category were apportioned among the schools according the number of teachers in each school.

### **3.5 Data Collection**

This study used questionnaire and document analysis to collect the required data. Questionnaires were used as data collection instruments because; they are inexpensive, they gather a large amount of data, wide ranging can be well designed, simple and clear and self-administering can be made anonymous and since they are presented on paper format there is no opportunity for interviewer bias (Mugenda & Mugenda, 2009). Questionnaires were used to collect data from the sampled teachers of the study.

Upon the approval of the research proposal by relevant authority, the researcher sought the consent of the participants to administer the questionnaires. The questionnaires were self-administered so that where issues were not clear to the respondents they were able to seek for clarification from the researcher. The questionnaires consisted of close-ended questions. Questionnaire was used because it is efficient, less expensive to construct, less time to conduct and permit collection of data from much larger, as indicated by Gay (2005). Few personnel are used to cover large populations within a short time using questionnaires making it cost effective, Bless and Achola (1987).

### **3.6 Data Analysis**

Analysis of data is done so that it can be interpreted to give meaning to the researcher; Adams (2000). Data collected were coded and analyzed using SPSS software using quantitative methods. Quantitative method involved the use of descriptive statistics majorly measures of central tendencies of mean, variance and standard deviation, and t-tests were used to get the relationship between teacher perception of ICT and performance.

# CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

## 4.1 Introduction

This chapter analyzes and presents the findings of the study. The purpose of the study was to investigate the perceived influence of ICT adoption on teachers' performance in the public secondary schools, Emuhaya Sub-County.

The specific objectives of the study were to:

- 1) Find the extent of ICT adoption
- 2) Determine the influence of ICT adoption on syllabus coverage
- 3) Establish the extent to which ICT adoption influence teacher professional records preparation
- 4) Establish the extent of influence of ICT adoption on subject content delivery
- 5) Determine the influence of ICT adoption on evaluation and achievement

## 4.2 Demographic Information of the Respondents

### 4.2.1: Response Rate

Table 3, which shows the summary of return rate of questionnaires from the respondents, reveals that the questionnaires were adequate for the study.

**Table 2: Response Rate**

Respondents	Questionnaires administered	Questionnaires returned	Return rate (%)
Teachers	104	84	80.8

Source: Survey data (2017)

Table 3 shows that in overall, 80.8% of all the questionnaires were returned for analysis, which was considered quite satisfactory. According to Oso and Onen (2009)

the acceptable response rate for a survey questionnaire administered personally by the researcher is achieved when the questionnaire return rate is 80% and above. This was achieved because the instruments in this study were personally administered by the researcher to the respondents.

#### 4.2.2: Respondents Demographics

The study sought to investigate the respondents' demographic characteristics such as; type of schools where the teachers were teaching, their professional qualifications, experience and their subjects of specialization.

**Table 3: Respondents' Bio-Data(n=84)**

<b>Item</b>	<b>F</b>	<b>(%)</b>	<b>Cumulative %</b>
<b>Gender</b>			
Male	48	57.1	57.1
Female	36	42.9	100.0
<b>Total</b>	<b>84</b>	<b>100.0</b>	
<b>Age</b>			
20-29 Years	15	17.8	17.8
30-39 Years	26	31.0	48.8
40-49 Year	37	44.0	92.8
Above 50 Years	6	7.2	100.0
<b>Total</b>	<b>84</b>	<b>100.0</b>	
<b>Professional Qualification</b>			
Diploma	6	7.1	7.1
B.Educ.	58	69.1	76.2
M.Educ	17	20.2	96.4
PhD	3	3.6	100.0
<b>Total</b>	<b>84</b>	<b>100.0</b>	
<b>Experience</b>			
< 5 Years	19	22.6	22.6
6-15 Years	35	41.7	64.3

16-30 Year	26	31.0	95.3
Above 30 Years	4	4.7	100.0
<b>Total</b>	<b>84</b>	<b>100.0</b>	

**Source: Survey data (2017)**

The study sought to investigate gender, age, professional qualifications and experience of the teachers who participated in the study. These demographic characteristics were necessary because they were considered important teacher characteristics in the adoption of ICT. From Table 4 it is evident that although both gender were represented in the study, a majority of 48 translating to 57.1% of the teachers who took part in the study were males. In regard to their ages, many (44.0%) of the respondents were in the age group of 40-49 years. Similarly, the findings of the study revealed that most of the teachers had bachelor of education and had 6-15 years of experience as teachers. This finding suggests that many of the teachers had adequate professional qualification and experience as teachers which are prerequisite requirement for effective adoption of ICT.

### **4.3 Findings on the Level of Adoption of ICT**

The objectives of the study was to investigate the extent of ICT adoption in secondary schools in Emuhaya Sub-County of Vihiga County. This was done by use of seven-itemed Likert scaled questionnaire that sought the views of the teachers on the extent of ICT adoption in their schools. The items on computer usage as indicators of ICT adoption were constructed in a way that the rating response of the teachers reflected the level of adoption in schools. The teachers used five levels; strongly disagree (1), disagree (2), undecided (3), agree (4) and strongly agree (5) to rate the level of ICT adoption in their schools. Table 5 shows the summary of response on extent of ICT adoption in secondary schools.

**Table 4 Extent of ICT Adoption in Schools (N=84)**

<b>Usage of ICT</b>	<b>SD</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>	<b>Mean</b>	<b>SD</b>
Both learners and teachers use computers and internet.	39.3%	27.4%	16.7%	14.3%	2.4%	1.75	0.37
Only teacher use a computer and internet.	0.0%	4.8%	8.3%	40.5%	46.4%	2.29	0.81
Students are equipped with computers and internet.	44.0%	20.2%	17.9%	13.1%	4.8%	1.86	0.65
School has provided desktop without internet.	4.8%	8.3%	10.7%	39.3%	36.9%	2.05	0.78
School has provided desktop with internet access.	30.5%	35.2%	11.9%	11.9%	10.5%	2.15	0.43
Computer laboratory well equipped is available.	46.4%	8.3%	11.9%	28.6%	4.8%	3.04	0.86
Internet connected laptops/phones/Wi-Fi is available.	24.8%	14.7%	13.1%	26.2%	21.2%	3.14	0.64
<b>Average score level of ICT usage in schools</b>						2.64	0.90

Source: Survey data (2017)

The findings of the study revealed that teachers in Emuhaya had moderately adopted use of ICT in the curriculum implementation in their schools. This was reflected by ICT usage average score of 2.64 with a standard deviation of 0.90, as indicated in Table 5. The table shows that although many (54.7%) of the teachers indicated that the schools in which the survey were conducted had computer laboratories, significant proportion of them were not well equipped, as was confirmed by 39.5% of the

teachers who took part in the study. Similarly, the findings of the study indicate that just a handful of the schools had internet. For example, whereas only 16.7% of the teachers agreed that both learners and teachers in their schools used computers and internet, two thirds (66.7%) of the teachers vehemently rejected the assertion that most of the schools in Emuhaya had computers and internet which were used by both teachers and students.

The findings of the study reveal that although some (30.5%) schools had desktop with internet access, it was discovered that in most of these schools only teachers used computers and internet. This was reflected by a low average score of 2.29, with a standard deviation of 0.81. On the other hand, the finding of the study established that nearly half of the schools had internet connected laptops/phones/Wi-Fi; however they were used by teachers only, as reflected by 47.4% of the teachers who were sampled for the survey, translating to average score of usage of 3.14 with a standard deviation of 0.64.

However, when the study sought to know whether the teacher respondents employed ICT in their teaching, the findings of the study revealed that a majority of 54 translating to 64.3% of teachers who were sampled for the study alluded that they infused ICT in their teaching. These findings mirror findings by Dexter (2001) on teacher perceptions with specific objective of investigating its impact on classroom practice. The study established that because the majority of the educators viewed ICT as adding value in their teaching, they embraced it in their teaching. Equally, the findings of this study concurs to that of Adeyinka (2007) which had shown that significant proportion of teachers had positive attitude towards ICT because of their perception that ICT has positive influence on teaching and learning.

#### **4.3.2 The Level of Adoption of ICT among Gender of the Teachers**

The study sought to investigate whether gender of the teacher had influence on the adoption of use of ICT in schools. The mean score for the level of ICT adoption between genders was calculated and an independent sample t-test was conducted to establish whether there was a statistically significant difference in the level of adoption of ICT between the genders of teachers. The results, as indicated in descriptive analysis Table 4.5 showed that the mean score in the level of ICT adoption among the male teachers was higher (M=4.18, S.E=.123) than that of their female counterparts (M=3.32, S.E=.153).

**Table 4.5: Group Statistics on Gender**

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Level of ICT Adoption	Female	36	3.3263	.92034	.15339
	Male	48	4.1761	.85429	.12331

Given that, the significance level for Levine’s testing the SPSS output was less than .05, the assumption of equal variances was violated; therefore, on reporting of the t-value, values in the second line in the independent samples t-test was used.

**Table 4.6: Independent Samples t-Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Level of ICT Adoption	Equal var. assumed	.616	.435	-4.365	82	.000	-.84983	.19470
	Equal var. not assumed			-4.318	72.351	.000	-.84983	.19681

Hence, the findings of the study, as shown in Table 4.6, indicated that there was a significant difference [ $t(82) = -4.365, P < 0.05$ ] between female and male teachers in the perceived level of ICT adoption. The male teachers had significantly higher mean in the level of ICT adoption, indicating that they infused ICT more in their teaching than the female teachers. Thus it was suffice to conclude that there is some relationship between the gender and the level of ICT adoption in secondary schools.

To investigate the magnitude of the differences between the two groups (not just whether the difference could have occurred by chance), an effect size was calculated.

Eta squared which indicated how much of the variance in level of ICT infusion explained by gender difference was calculated using the formula;

$$\text{Eta squared} = \frac{t^2}{t^2 + (n_1 + n_2 - 2)}$$

The magnitude of the differences in the means was quite respectable (eta squared=.1029). This indicated that gender difference explained 10.3% of the variance in ICT adoption.

#### **4.4 Findings on the Extent of Influence of ICT Adoption on Teacher Performance**

The perceived influence of ICT adoption on teacher performance questionnaire was used to gather sampled teachers' own opinions on how they rated ICT adoption on teachers' performance. Using a five-point scale (0= no influence at all, 1=slight influence, 3=moderate influence, 4= high influence and 5=very high influence), teachers indicated their opinion on the level of influence of ICT adoption on the various aspects of teacher performance; syllabus coverage, professional records preparation, subject content delivery and learner evaluation and achievement.

##### **4.4.1 Influence of ICT Adoption on Syllabus Coverage**

Teachers were asked to rate the level of influence of ICT adoption on syllabus coverage and their responses are presented in Table 6.

**Table 5: Teachers' Responses on Degree of Influence of ICT Adoption on Syllabus Coverage (N=84)**

Item	NIA	SI	MI	HI	VHI	Mean	SD
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It enables teachers to complete subject syllabus on time	1.2%	25.0%	19.0%	38.1%	16.7%	3.44	1.07
Help prepare course material on time	0.0%	11.9%	11.9%	36.9%	39.3%	4.04	0.99
Helps to make the syllabus more engaging	2.4%	11.9%	23.8%	42.9%	19.0%	3.62	1.07
Helps communicate course goals and content well	0.0%	9.5%	33.3%	32.1%	25.0%	3.73	0.94
Helps students learning of critical concepts/ideas	7.1%	17.9%	26.2%	26.2%	22.6%	3.39	1.22
Is an effective tool for teaching	0.0%	13.1%	22.6%	38.1%	26.2%	3.77	0.98
Average score of Influence on syllabus coverage						3.66	0.71

Key: No influence at all (NIA), Slight influence (SI), Moderate influence (MI), High influence (HI), Very high influence (VHI) and SD-standard deviation.

Source: Survey data (2017)

From Table 6, it is evident that ICT adoption had high influence (Average score=3.66; standard deviation = .71) on syllabus coverage among the teachers, as perceived by many of the teachers who took part in the study. On the use of ICT in preparation of course materials, teachers rated it as of very high influence (Average score =4.04; standard deviation =.99) on syllabus coverage, with more than three quarters (76.2%) of them agreeing that ICT adoption is indeed of very high influential in helping teachers to prepare teaching and learning materials in time. Equally, on ICT as a tool for teaching, the teachers had a perception that ICT adoption has high influence (Mean=3.77; standard deviation=.98) on teaching and learning, with nearly two-thirds(64.3%) of the teachers holding a perception that ICT had either a high or very high influence on syllabus coverage.

This finding agrees with those of Duffield (2001) in which it was established that a performing teacher is one who is able to improve students' skills while employing learner centered strategies which are infused in teaching and learning through ICT. The results also agrees with the finding by Okeke (2004) and Robinsons and Derenzo (2009), where in their studies to investigate the importance of ICT in education, established that a performing teacher is one who achieves high student success with proper management of resources including ICT. This finding implies that teachers who effectively adopt and use ICT in syllabus coverage usually post good performance as reflected in their learners' work. Further, the finding means that the teachers are better placed to effectively cover syllabus when they adopt and use ICT during teaching and learning. Studies have shown that teachers who have positive attitude towards adoption of ICT effectively cover syllabus.

#### **4.4.2 Influence of ICT Adoption on Professional Records Preparation**

The respondents were asked to rate the perceived influence of the ICT adoption on professional records preparation as one of the indicators of teacher performance. Their responses were computed in percentage frequencies as presented in Table 7.

**Table 6: Teachers' Responses on Degree of Influence of ICT Adoption on Professional Records Preparations**

Item	NIA	SI	MI	HI	VHI	Mean	SD
Helps to update lesson notes on time	1.2%	9.5%	14.3%	17.9%	57.1%	4.20	1.08
It help to administer tests on time from data bank	6.0%	2.4%	9.5%	42.9%	39.3%	4.07	1.06
Preparation of class notes is	0.0%	1.2%	0.0%	31.0%	67.9%	4.65	0.55

effectively done by use of word processor							
Preparation of lesson plan is effectively done by use of a computer	0.0%	10.7%	0.0%	32.1%	57.1%	4.36	0.93
It help to develop schemes of work using computer	1.2%	9.5%	15.5%	22.6%	51.2%	4.13	1.07
It enhances professional development of the teacher	0.0%	1.2%	7.1%	25.0%	66.7%	4.57	0.68
Average score of Influence on professional records preparation						4.33	0.58

Key: No influence at all (NIA), Slight influence (SI), Moderate influence (MI), High influence (HI), Very high influence (VHI) and SD-standard deviation.

Source: Survey data (2017)

Table 7 reveals that teachers perceive ICT adoption to have very high (Average score=4.33; Standard deviation=0.58) influence on professional record preparations by the teachers, with all the indicators rated as has having very high (mean ranging between 4.07 and 4.57) influence on professional record preparation. “Preparation of class notes is effectively done by use of ICT” received the highest rating (mean=4.65; standard deviation=0.55), with a significant majority of 67.9% of the teachers who took part in the survey strongly alluding that adoption of ICT greatly help in preparation of class notes by use of word processor. Similarly, the findings of the study show that adoption of ICT in curriculum implementation has significantly influenced the preparation and update of lesson notes. Nearly nine out of ten (89.2%) of the teachers who participated in the survey held that preparation of lesson plans and notes are effectively done by use of a computer and a further 66.7% of them strongly believed that ICT adoption has very highly influenced teachers to update their lesson notes in time.

These findings imply that ICT adoption has overwhelmingly enhanced teachers' ability to prepare their professional records. These findings disapprove the position held by Cox and Marshalls (2007) who had pointed out that ICT has no clear positive effects on performance. It also disagrees with the findings of Leveun *et al* (2004) who in their study alluded that there is little evidence in favour of expected merits accruing from the application of ICT in schools.

On the contrary, the findings of this study support the point of view held by Dexter (2001), Albirini (2006) and Momanyi (2006) that the ICT adoption has strong benefits on teaching results and have a strong positive correlation with teacher performance. The findings also concurred with a study by Dexter (2001) on teacher perceptions on the impact of use of ICT in classroom practice, which established that majority of the educators viewed ICT as adding value in their teaching.

#### **4.4.3 Influence of ICT Adoption on Subject Content Delivery**

The study investigated the extent of influence of ICT adoption on subject content delivery by the teachers. They were presented with Likert-scaled items whose constructs were related to aspects of content delivery. Their responses were computed in percentage frequencies, as presented in Table 8.

**Table 7: Teachers' Responses on Degree of Influence of ICT Adoption on Subject Content Delivery (N=84).**

<b>Item</b>	<b>NIA</b>	<b>SI</b>	<b>MI</b>	<b>HI</b>	<b>VHI</b>	<b>Mean</b>	<b>SD</b>
Use of ICT improves quality of teaching among teachers	0.0	2.4	8.3	17.9	71.4	4.56	0.74
Use of ICT has made my subjects more enjoyable thus popular (more enrollment)	0.0	1.2	13.1	16.7	69.0	4.58	0.76

ICT usage increases teacher capability that is teach more/bigger class	0.0	3.6	7.1	19.0	70.2	4.57	0.78
ICT usage increases the knowledge of the teacher i.e proper content expertise	4.8	2.4	14.3	26.2	52.4	4.19	1.07
ICT usage increases instructional design skills of the teacher	0.0	0.0	16.7	46.4	36.9	4.20	0.70
ICT usage increases instructional delivery skills of the teacher	4.8	7.1	26.2	39.3	22.6	3.68	1.05
Average score of Influence on subject content delivery						4.29	0.61

Key: No influence at all (NIA), Slight influence (SI), Moderate influence (MI), High influence (HI), Very high influence (VHI) and SD-standard deviation.

Source: Survey data (2017)

The findings of the study revealed that ICT adoption has a very high influence on subject content delivery, as was reflected by overall average score of influence of 4.29 with a standard deviation of 0.61. The items “use of ICT improves quality of teaching among teachers”, “use of ICT has made my subjects more enjoyable thus popular (more enrollment)” and “ICT usage increases teacher capability, that is teach more/bigger class” received the highest ratings of mean=4.56 (SD=0.76), 4.58 (SD=0.78) and 4.57 (SD=0.74) respectively from the teachers who took part in the survey. A significant majority of the teachers strongly held a perception that adoption of ICT has made teaching of most of the subjects more enjoyable and has improved teacher capability to teach bigger class.

The above findings mirrors that of Ochanda and Indoshi (2006) study in which it was found that teachers had positive perception of the use of calculators in teaching since they believed that ICT positively improves teaching and learning. The finding means

that the adoption of ICT in school curriculum significantly improves teachers' subject content delivery.

#### **4.4.4 Influence of ICT Adoption on Learner Evaluation and**

#### **Achievement**

The study equally required teachers to rate the influence of ICT adoption on learner evaluation and achievement. The respondents' views were captured using a Likert-scaled questionnaire whose items were linked to the constructs of learner evaluation achievement in regard to ICT adoption. Their views were summarized in percentage frequencies as in Table 9.

**Table 8: Teachers' Responses on Degree of Influence of ICT Adoption on Learner Evaluation and Achievement**

<b>Item</b>	<b>NIA</b>	<b>SI</b>	<b>MI</b>	<b>HI</b>	<b>VHI</b>	<b>Mean</b>	<b>SD</b>
ICT increases academic achievement in terms of grade	13.1%	11.9%	11.9%	41.7%	21.4%	3.46	1.30
Have improved my subject mean	6.0%	1.2%	23.8%	39.3%	29.8%	3.86	1.05
It shows historical subject means and hence areas of improvement	0.0%	13.1%	22.6%	48.8%	15.5%	3.67	0.89
Has increased number of quality grades	0.0%	7.1%	28.6%	35.7%	28.6%	3.86	0.91
ICT usage increases the assessment skills of the teacher	1.2%	16.7%	23.8%	32.1%	26.2%	3.65	1.07
Use of ICT creates opportunity to develop and keep records for evaluating	2.4%	15.5%	10.7%	47.6%	23.8%	3.95	1.06

the learners

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Average score of Influence on learner evaluation and achievement	3.81	1.16
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Key: No influence at all (NIA), Slight influence (SI), Moderate influence (MI), High influence (HI), Very high influence (VHI) and SD-standard deviation.

Source: Survey data (2017)

According to Table 9, teachers had generally high perception that ICT adoption highly influences learner evaluation and achievement, as reflected by overall average score of influence of 3.81 though with a relatively big standard deviation of 1.16. The relatively big standard deviation implies that although the teachers generally believed that ICT adoption has high influence on learner evaluation and achievement, there were divergent views on how influential ICT is on learner evaluation and achievement, with some of the teachers holding the perception that ICT is not very influential.

A significant majority (71.4%) of the teachers who took part in the survey held that use of ICT highly or very highly creates opportunity to develop and keep records for evaluating the learners. This item was rated as the most influenced (mean=3.95; standard deviation=1.06) aspect of teacher performance. Similarly, although 28.6% of the teachers were of the opinion that ICT adoption had not significantly increased number of quality grades, majority (64.3%) of them agreed that ICT adoption had highly influenced (mean=3.86) number of quality grades and had generally improved most of the subject means.

These findings support the revelation by KIE (2002) in the survey conducted by the Kenya National Examination Council which showed that learners' performance in

Biology was wanting due to absence of use of ICT in teaching. On the same note, it concurs with the findings of a study by Ndirangu (2006) on the use of computer in teaching biology in improving students understanding and perception of the cell theory, where it established that the use of the computer tend to improve the number and quality of scores/grades.

On the contrary, these findings sharply differ with that of Tracano (2005) who having reviewed a series of studies on ICT impact on schools, alluded that the impact of ICT use on teaching outcomes is unclear. Similarly, the findings are also in contrast to that of Cox and Marshalls (2007) which had alluded that their study do not show clear effects of the use of ICT on performance of the students.

However, the finding suggests that the teachers have faith in ICT adoption as a way of improving learner evaluation and achievement. This implies that adoption of ICT in secondary schools positively influences teacher performance as exhibited by improved learner evaluation and achievement.

#### **4.5 Discussion of Findings**

From the study data the findings are positively skewed where most of the teachers perceive the adoption of ICT as having value addition on their performance. This in agreement with the study findings of Albirini (2006) and revelation by KIE (2002) in the survey conducted by the Kenya National Examination Council which showed that learners' performance in Biology was wanting due to absence of use of ICT in teaching. On the same note, it concurs with the findings of a study by Ndirangu (2006) on the use of computer in teaching biology in improving students

understanding and perception of the cell theory, where it established that the use of the computer tend to improve the number and quality of scores/grades.

On the contrary, these findings sharply differ with that of Trucano (2005) who having reviewed a series of studies on ICT impact on schools, alluded that the impact of ICT use on teaching outcomes is unclear. Similarly, the findings are also in contrast to that of Cox and Marshalls (2007) which had alluded that their study do not show clear effects of the use of ICT on performance of the students.

However, the finding suggests that the teachers have faith in ICT adoption as a way of improving learner evaluation and achievement. This implies that adoption of ICT in secondary schools positively influences teacher performance as exhibited by improved learner evaluation and achievement.

## **CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter gives the summary of the findings, conclusion, recommendations and suggestions for further research. In this study the perceived influence of ICT adoption on teachers performance in public secondary schools in Emuhaya sub-county was determined by the use of close-ended questionnaires administered to TSC employed teachers. The literature review centered mainly on the concept of ICT adoption and teacher performance and its indicators in relation to theory of reasoned action and diffusion innovations. The findings presented in chapter four have shed some light

regarding the degree of adoption of ICT and its influence on the four aspect of teacher performance; syllabus coverage, professional records preparation, subject content delivery and learner evaluation and achievements. Subsequently, conclusions are made in view of the findings and recommendations proposed following the conclusions pegged on the objective of the study.

## **5.2 Summary of the Study Findings**

The findings of the study revealed that teachers in Emuhaya had moderately adopted use of ICT in the curriculum implementation in their schools, as reflected by ICT usage average score of 2.64 with a standard deviation of 0.90. The findings show that although many of the schools had computer laboratories, a number of them were not well equipped. On the other hand, the finding of the study established that nearly half of the schools had internet connected laptops/phones/Wi-Fi but were used by teachers only. However, the findings of the study established that most of the teachers embraced and infused ICT in teaching and learning.

From the results of the study, it was revealed that ICT adoption had high influence (Average score =3.66; standard deviation = .71) on syllabus coverage among the teachers, as perceived by many of the teachers who took part in the study. While findings of the study also revealed that teachers perceive ICT adoption to have very high (Average score = 4.33; Standard deviation = 0.58) influence on professional record preparations by the teachers, with all the indicators rated as has having very high (mean ranging between 4.07 and 4.57) influence on professional record preparation. It was also established that ICT adoption has a very high influence on subject content delivery, as was reflected by overall average score of influence of 4.29 with a standard deviation of 0.61. From the study findings. The results of the study

show that most teachers held a perception that ICT improves their quality of teaching, makes teaching and learning more enjoyable and increases teacher capability to handle bigger classes.

The findings of the study further revealed that although most teachers had high perception that ICT adoption highly influences (mean=3.81) learner evaluation and achievement, there was relatively big standard deviation of 1.16 reflecting existence of divergent views with some of the teachers holding the perception that ICT is not very influential in regards to learner evaluation and achievement. Nonetheless, the findings of the survey show that use of ICT highly creates opportunity to develop and keep records for evaluating the learners and increased number of quality grades.

### **5.3 Conclusions**

From the findings of the study, it can be concluded that ICT adoption in secondary schools in Emuhaya sub-county was moderate due to lack of adequate infrastructural facilities such desktops, laptops and WIFI internet connections for the teachers and students. From the study, it can also be concluded that although teachers are ready and willing to adopt use of ICT lack of appropriate ICT equipment impede their effort.

However, it was concluded that because the majority of the teachers held perception that ICT add value; its use in teaching and learning can help the teachers to effectively handle larger class sizes, effectively cover syllabus, enhance teachers' ability to efficiently prepare professional records and help teachers to effectively evaluate learner achievement by teachers. From these findings it can be concluded that ICT adoption can significantly improve the teacher performance in secondary schools.

## **5.4 Recommendations for Policy, Practice and Theory**

Based on the findings from this study, the researcher makes the following recommendations in order to harness positive influence of ICT adoption on teacher performance not only in the secondary schools of Emuhaya sub-county but also in all the schools in the country:

This study revealed that most schools were perceived to be ill-equipped with inappropriate with ICT equipment, impeding on complete ICT adoption by teachers. Consequently, this study recommends that the Ministry of Education should step in their provision of relevant ICT infrastructure in schools.

As this study revealed, ICT adoption positively influenced all the aspect of teacher performance (syllabus coverage, professional records preparation, subject content delivery and learner evaluation and achievement), it is, therefore, recommended that the Ministry of Education and TSC should ensure that all secondary schools teachers receive relevant training to provide them with appropriate knowledge and skills to effectively adopt use of ICT. This would improve teacher performance, which would be reflected by improved student performance.

## **5.5 Limitations of the Study**

The researcher encountered a number of limitations in process of carrying out the research. One issue was the unanswered questionnaires being returned, reducing the response return rate to about 80%.which was further compounded with limited time to carry out research to allow more respondents to be reach plus the financial constrains

since it was financed from personal sources. There was challenge of identifying TSC teachers from non-TSC employed teachers .It also should be noted that the study was limited only to public secondary schools teachers employed with TSC in Emuhaya sub-county. The study restricted to only the objectives and research instruments in this study. It also dealt with one region Emuhaya sub-county and therefore the data generated should be interpreted with caution when making general results to entire county especial private schools and areas with well developed ICT systems in place.

### **5.6 Suggestions for Further Research**

The findings of this study offer an ample chance for further research on an ethnographic studies on how well teachers utilize Information and Communication Technology in their teaching. Also other studies on the level of preparedness of the teachers with regard to adoption of Information and Communication Technologies need be conducted. Since some teachers were found not to have adopted information and communication technologies in their teaching. It should be noted that the current study was carried out in only sub-county. Therefore the researcher suggests that similar studies need be carried out in other parts of the country to gather adequate information on Information and Communication Technology adoption,for the purpose of making generalization.

## REFERENCES

- Aaronson, D. (2007).Teacher and Student Achievement in the Chicago Public High School , *Journal of Labor Economics* 2(5)95-135
- Adams, J.S. (2000).Inequity in Social Change: *Advances in experimental social psychology*.Vol.2 New York: Academic Press.
- Adeyinka , A .A. (2007).An assessment of secondary school teachers use of ICT: Implication for further development of ICTs use in Nigeria Secondary Schools. *The Turkish online. Journal of Educational Technology* 6(3)5-17
- Ajzen, I. (1991).The Theory of Planned Behavior, *Organizational Behaviour and Human Decision Process*,529(2)199-211.
- Albirini, A.A (2006).Teachers Attitudes Towards Information and Technology. The case of Syrian EFL Teachers .*Journal of Computers and Education*,47(3)373-398

- Amutabi, M, N (2004).Challenges facing the use of ICT in Kenyan Universities.  
UNESCO Forum Colloquim on Research and Higher Education Policy 1-3  
December 2004.
- Ang'ondi, E.K (2013).Teacher Attitude and Perception on the Use of ICT in Teaching  
and Learning as observed by ICT Champion Retrieved from  
[http://creativecommons.org/licenses/by-nc-no.3.0\(unpublished](http://creativecommons.org/licenses/by-nc-no.3.0/unpublished) research)
- Antoniou, P.H. &Ansoff,H.I.(2004). Strategic Management of Technology  
*Technology Analysis and Strategic Management*, 16(2)275-291
- Argrics,C. (1994). *Good Communication that Blocks Learning. Harvard Business  
Review July to August,77-85*
- Armstrong, M.(2009). *Human Resources Management Practice*. Replika Press Ltd-  
India.
- Assael,H (2004). *Consumer Behaviour: And Marketing Action* 6<sup>th</sup>Edition, New York,  
South Western College Publishing.
- Babalola , J.B (2009). *Education that Raises Productivity in Nigeria*, Ibadan:  
Awemake
- Banerjee , A (2004). Remedying Education: Evidence from Two Romanized  
Experiments in India
- Barret, A.(2001). *Does training generally work? Industrial and Labor Relations  
Review*.54,647-662
- Becta, F. (2008). Harnessing Technology: School Survey 2008.  
Retrieved from<http://emerging> technologies. becta.org.uk.pdf.
- Bless, W.& Achola,P.W. (1987). *Fundamentals of research methods an African  
approach*. Lusaka, University of Zambia.

- Boater, J. (2013). *Experiencing Schools Mathematics: Traditional and Reform Approaches to Teaching and their Impact on Learning*. Routledge. Retrieved from [Http://Books.Google.com](http://Books.Google.com).
- Buabeng-Andoh, C.(2012). An Exploration of Teachers' Skills Perceptions and Practices of ICT in Teaching and Learning in the Ghanaian Second Cycle Schools *Contemporary Educational Technology*,3(1).Retrieved from <http://search.Ebscohost.com>
- Carrington, H. & Robinson, M.(2010). *Digital Literacy: Social Learning and Classroom Practices*. Los Angeles: SAGE Publications Ltd.
- Chua. S.,Chen, D. and Wong, A.F.L.(2009). *Computer anxiety and its correlates: a meta-analysis. Computers in Human Behavior*.15:609-623.
- Clariana , R.B. and Schultz ,C.W.(2011). Content achievement in computer-based instructions. *Journal of Computers and Science Teaching*.12(3/4):277-288.
- Churchill,G.A. (1991). *Marketing Research: Methodology Foundations*. 5<sup>th</sup> Edition. The Dryden Press, Australia
- Cresswell , J.W.(2007). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches, 3<sup>rd</sup> Edition*. London SAGE
- Cox, M.P and Cox, K.(1999).What factors support or prevent teacher from using ICT in their classroom? British Educational Research Association Annual Conference. University Sussex.
- Cox, M. J and Marshall, G.(2007).Effects of ICT: Do we know what we should know? *Education and Information Technologies*,12(2)59-70
- Cuttance, P. (2001). Information and Communication Technologies, Department of Education Training and Youth Affairs, Canberra.

- Dessler , G.(2008). *Human Resource Management.11<sup>th</sup> Edition*. Pearson Prentice Hall-U.S.A
- Dexter, S.L, Anderson, R.E and Becke, H.J(1999).Teachers views of computers as catalyst for changes in their teaching practices. *Journal of Research on Computing Journal,31(4)221-259*.
- Drucker, P.F.(2002). *Managing in the Next Society*, Oxford: Butterworth- Heinemann
- Duffields, J.(2001). Trails, tribulations and minor success: Integration of technology in a pre-service teacher education. Program. Tech Trend 22-26
- Earlie, S.R (2002). The Integration of instructional technologies into public education: promises and challenges .*Educational Technology,52(2)5-35*
- Empirica (2006). Benchmarking Access and Use of ICTs in schools 2006 Bonn Empirica
- Fishbein, M.(1975). Beliefs, Attitude and Behavior Reading MA: Addisson, Wesley Publishing Company. Inc.
- Gay, L.R. (2000). *Educational research: Competencies for analysis and application.2<sup>nd</sup> Edition*. London Marill Publishing Company
- Harris, D.N (2008).Teacher Training, Teacher Quality and Student Achievement. University of Winsconsin-Machison.
- Harolds,O.(2004). Aesthetic Perceptions. *British Journal of Aesthetics 18(4)307- 316*
- Johnson, G and Scholes, K.(2004). *Exploring Corporate Strategy*, Sixth Edition, New Delhi:Prentice-Hall
- Kiboss and Ogunniyi (2003). Influence of a Computer-based Intervention of Students Conceptions of Measurement in Secondary Schools Physicsin Kenya. *Themes in Education 4(2),203-217*.

- KIE (2005,2008). *ICT Adoption in Secondary Schools*, Nairobi, KIE.
- Kirkpatrick, H.(1998). Computers Make Kids Smarter-right? *TechnosQuartelyno*.7
- Kombo, K.D and Trump, D.(2006). *Proposal and Thesis Writing*: Paulines Publications Africa
- Kothari,C.R.(2004). *Research Methodology: Methods and Techniques*.2<sup>nd</sup>Edition.New Age Publishers. India
- KNBS (2012). Statistical abstract 2015.Nairobi:Kenya National Bureau of Statistical.  
Retrieved from<http://www.knbs.or.ke/Examination%20Analysis.php>
- KNEC (2010). K.C.S.E. Report Nairobi: KNEC
- KNEC (2012). K.C.S.E. Report Nairobi: KNEC
- KNEC(2015). K.C.S.E. Report Nairobi: KNEC
- Kulik,J.A. (1994). Meta-analysis Study of Findings on Computer-based Instructions.  
*Technology Assessment in Education and Training*. Hillsdale
- Kukachi, A.N.(2003). Opportunities and Challenges for use and integration of ICT in Management of Public Secondary Schools in Bungoma South District, Kenya, *International Journal*, Retrieved from <Http://www.ljsr.Net>.
- Liaw,S.H.(2007).Surveying instructor and learner attitudes towards E:learning.*Computer and Education*.49(4)1066-1080
- Lock, J.(2007). *Immigration and Integration: ICT in pre-service teacher education*  
*Contemporary Issues in Technology and Teacher Education*.7:575-589.
- Merriam, S. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.
- Miles, M. and Huberman , A.(1994). *Qualitative data analysis*.2<sup>nd</sup> edition. Thousand Oaks, CA: Sage
- Ministry of Education Science and Technology,(MOEST,2008). *Report of the*

- Task Force on Affordable Secondary Education*, Shrand Publishers, Nairobi
- Mishra , P .and Koehler, M.(2006). Technological Pedagogical Content Knowledge: a framework for teacher knowledge. *Teachers College Record*.108:1017-1054.
- Mohammad ,A.(2003). Education case study, ASPBAE research on information and Communication technology(Bangladesh),Asian South Pacific Bureau of Adult Education (ASPBAE), Dhaka Ahsania Mission.
- Momanyi , L.(2006). The heed for integration of technology in k-12 school settings in Kenya Africa. *AACE Journal*,149(20)154-177
- Mugenda ,O. and Mugenda , A.(2003). *Research Method Quantitative and Qualitative Approaches*. Nairobi; African Centre for Technology Studies
- Mumford, E. (2000). Development of Leadership Skills: *Experience and timing Leadership Quarterly* 11(1) 87-114
- Mutai , C. (2000). Implication of free primary education policy on the utilization of learning resources in Primary Schools in Kenya. Med. Thesis Masinde Muliro University of Science and Technology.
- Ndirangu, M.(2006). The Use of Instructional Simulation to Support Classroom Teaching. *Journal of Education Multimedia*, Egerton University.
- Ochanda,J.P and Indoshi, F.C.(2001). Challenges and benefits of using scientific calculators in the teaching and learning of Mathematics in Secondary Schools education. *Journal of Media and Communication Studies*,3(3)102-111
- Okeke , B.(2004). *Teaching in Nigeria: The Bureaucracy and Professionalisms*. Port Harcourt: Mercury International Publishing, Nigeria
- Okumbe , J.A.(2001). *Human Resources Management: An Educational Perspective* 1<sup>st</sup> Edition Nairobi: Educational Development and Research Bureaus

- Orodho , J.A. (2008). *Techniques of Writing a research proposal & report in Educational and Social Sciences*, Kanezja Enterprises, Maseno
- Richards, L. (2008). How Computer Aid International projects are helping to achieve the MDGs. *Millennium Development Goals Review April Issue, 14-16*
- Robbins, S.P. and Decenzo, D.A.(2008). *Fundamentals of Management. Essentials Concepts and Applications*. Pearson/Prentice Hall.
- Rogers ,E.(2007). *Diffusion of Innovations* New York. Free Press
- Rollei ,F.(2001). Helping immigrants become teachers. *Educational Leadership* 58(8) 68-71
- Russell,J.K. (1985). Organization performance and organizational level training and support. *Personnel Psychology*,3(8)849-863.
- Sullivan ,T. (2003). No access no use no impact: Snapshot surveys of educational technology in k-12.*Journey of Research on technology in Education*,36(1)15-27
- Teo ,T.(2008). Pre-service teachers' attitudes towards computer use *Australian Journal of Educational Technology* 24(4)413-424
- Toomey, R. (2001). Schooling issues digest: Information and communication technologies for teaching and learning, Sydney, Department of Education, Training and Youth Affairs
- UNESCO(2008). ICT Competencies Standards for Teachers. United Kingdom. UNESCO Press
- Wabuyele , L.C. (2003). Understanding Teachers and Administrators perceptions and experience towards computer use in Kenyan classroom, Dissertation. Ohio University

- Wang, Y.(2002). When technology meets beliefs: Pre-services teachers' perceptions of the teachers role in the classroom with computers .*Journal of Research on Technology in Education*.35(6)150-161
- Wanjala, M.S, Khaemba, E. N & Mukwe, C.(2011). Significant factors in professional staff development for the implementation of ICT education in secondary schools, in Bungoma District. *International Journal of Curriculum and Instruction* ,1(1),30-42
- Ward ,L.(2003). Teacher practice and integration of ICT: Why aren't our secondary school teachers using computers in their classrooms? *Paper presented at NZARE/AARE 2003,1-13*
- Wenglinsky ,H.(1998). Does it matter? The relationship between Educational Technology and Student achievement in Mathematics Educational testing service
- Wright ,P.M, Gardner, T.M and Allen, M.R(2005). The relationship between HR practices and firm performance Examining causal order. *Personnel Psychology*. 58(1)409-446.
- World Bank(2006). Information and Communication for Development: Global Trends and policies. Washington D.C. The World Bank Institute
- Zhao, Y. and Cziko , G.A.(2001). Teacher adoption of technology a perceptual theory perspective .*Journal of Technology and Teacher Education*,9(1),5-30



## APPENDICES

### Appendix I: Letter of Introduction



**UNIVERSITY OF NAIROBI**  
**SCHOOL OF BUSINESS**  
**KISUMU CAMPUS**

Telegrams: "Varsity" Nairobi  
Fax: 4181650  
Kisumu, Kenya  
Telex: 22095Varsity  
Mobile: 0720348080  
Email: [ajaleha@uonbi.ac.ke](mailto:ajaleha@uonbi.ac.ke)

P.O Box 19134-40123  
Kisumu, Kenya

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Date: 5<sup>th</sup> October 2017

**TO WHOM IT MAY CONCERN**

The bearer of this letter WYCLIFFE OJINA ODEDE

REGISTRATION NO: D61/70990/2014

The above named student is in the Master of Business Administration degree program. As part of requirements for the course, he is expected to carry out a study on **"Perceived Influence on Information and Communication Technology Adoption on Teacher Performance in Public Secondary Schools in Emuhaya Sub-County, Vihiga County, Kenya."**

He has identified your organization for that purpose. This is to kindly request your assistance to enable him complete the study. The exercise is strictly for academic purposes and your assistance will be greatly appreciated.

Thanking you in advance.

Sincerely,

**ALEX JALEHA**  
**CO ORDINAOTR, SOB, KISUMU CAMPUS**

05 OCT 2017

Cc File Copy

## Appendix II: Teacher Questionnaire

This questionnaire is designed to collect data from TSC teachers in public secondary schools in Emuhaya Sub-County of Vihiga County.

Please answer the questions below by marking with a tick where appropriate.

### Section A: Demographic Information

1. What is your gender? Male  Female
2. In which age group in years do you belong?  
20 – 29  30 – 39  40 – 49  50 – 59
3. Please indicate your Professional Qualification Less than 5  6 – 15   
16– 30  31 and above   
Diploma  B.ed  M.Ed  PHD
4. What is your teaching experience in years?
5. Which area do you handle mostly/teach mostly as per specialization?  
Humanities  Sciences  Applied  Languages  Mathematics
6. What is the type/level of your current school?  
National  Extra- County  County  Sub-County

### Section B: ICT Adoption In Schools

1. Do you employ ICT infusion in your teaching? Yes  No
2. How often do you use ICT in your teaching methodology in your lessons?  
Always  Mostly  Sometimes  Rarely  None at all
1. To what extent do you agree or disagree with the following statement concerning ICT Adoption in School? Rate the adoption on a 5-point likert scale provided below where 1=strongly disagree and 5=strongly agree

ICT Adoption-Computer usage	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.Both learners and teachers use computers and internet					
2.Only teacher use a computer and internet.					
3.Students are equipped with computers and internet					
4.School has provided desktop without internet					

5.School has provided desktop with internet access					
6.Computer laboratory well equipped is available					
7.Internet connected laptops/phones/wifi is available					

**Section C: Perceived Influence of ICT on Teacher Performance**

1. To what extent do you agree or disagree with the following statement concerning the role of ICT on Teachers performance? Rate them on a 5-point Likert scale provided below where 1 = strongly disagree and 5 = strongly agree

<b>a)Syllabus Coverage</b>	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. It enables teachers to complete subject syllabus on time					
2. Help prepare course material on time					
3. Helps to make the syllabus more engaging					
4. Helps communicate course goals and content well					
5. Helps students learning of critical concepts/ideas					
6. Is an effective tool for teaching					
<b>b) Professional Records Preparation</b>					
1. Helps to update lesson notes on time					
2. It help to administer tests on time from data bank					
3. Preparation of class notes is effectively done by use of word processor					

4. Preparation of lesson plan is effectively done by use of a computer					
5. It help to develop schemes of work using computer					
6. It enhances professional development of the teacher					
<b>c.Subject Content Delivery</b>					
1. Use of ICT increases quality of teaching among teachers					
2. Use of ICT has made my subjects more enjoyable thus popular (more					
3. ICT usage increases teacher capability that is teach more/bigger					
4. ICT usage increases the knowledge of the teacher i.e proper content expertise					
5. ICT usage increases instructional design skills of the teacher					
6. ICT usage increases instructional delivery skills of the teacher					
7. ICT usage increases the assessment skills of the teacher					
8. ICT usage increases instructional course management of teacher					
<b>d. Learner evaluation and achievements</b>	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. ICT increases academic achievement in terms of grade					
2. Have improved my subject mean					
3. It shows historical subject means and hence areas of improvement					

4. Has increased number of quality grades					
5. ICT usage increases the assessment skills of the teacher					
6. Use of ICT creates opportunity to develop and keep records for evaluating the learners					

### Appendix III: Teachers Directory

ZONE	SCHOOL	LEVEL/TYPE	TEACHERS
EMUHAYA NORTH	EBUKHAYA	SC/M/DAY	8
	EBUSILOLI	C/M/DAY	16
	EBUNANGWE	SC/B/BOYS	10
	EBUSIRATSI	C/B/GIRLS	14
	EMATSULI	SC/M/DAY	6
	EMMUKUNZI	SC/M/DAY	8
	KILINGILI	C/M/DAY	19
	MWITUHA	SC/M/DAY	12
EMUHAYA WEST	EBUKANGA	SC/M/DAY	13
	EBUKOOLO	SC/M/DAY	4
	EBUYALU	SC/M/DAY	10
	EMANYINYA	SC/M/DAY	12
	EMUSIRE	EC/B/BOYS	23
	ESALWA	C/B/BOYS	17
	ESIBILA	SC/M/DAY	12
	ESSABA	SC/M/DAY	12
	MUNGOYE	SC/M/DAY	3
	ITUMBU	SC/M/DAY	5
LUANDA EAST	BUNYORE	N/B/GIRLS	47
	EBUBAYI	SC/M/DAY	18
	EBULONGA	SC/M/DAY	6
	EBWALI	SC/M/DAY	13
	EMMATSI	SC/M/DAY	6
	ESSONGOLO	SC/M/DAY	9
	HOBUNAKA BOYS	SC/B/DAY	17
	HOBUNAKA GIRLS	SC/G/DAY	4
	IBUBI	C/B/BOYS	10
LUANDA SOUTH	EBUSAKAMI	C/B/GIRLS	18
	EBUSYUBI	SC/M/DAY	5
	EBWIRANYI	SC/M/DAY	6
	EKAMANJI	SC/M/DAY	4
	EKWANDA	SC/M/DAY	19
	ESIANDUMBA	SC/M/DAY	6
	ESIBEYE	SC/M/DAY	6
	KWILIBA	SC/M/DAY	4
	MUMBOHA	SC/M/DAY	9
	EBUSAMBA	SC/M/DAY	4
<b>TOTALS</b>	<b>37</b>		<b>416</b>

#### Appendix IV: Timeframe for the Study

Activity	June 2015 – Sept 2017	Oct – 2017	Oct – 2017	Nov 2017
Research proposal development				
Data Collection				
Data Analysis and Project Writing				
Project Submission				