FACTORS AFFECTING UTILIZATION OF ICT IN ADMINISTRATION OF PUBLIC SECONDARY SCHOOLS IN KIAMBU SUB-COUNTY, KIAMBU COUNTY, KENYA

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DECLARATION

I declare that this is my original work and it has not been submitted for examination in any other university.

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DEDICATION

This work is dedicated to the Almighty God for sustaining me and providing for my needs and also to my family for their selfless support and encouragement in my studies.

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I am grateful to all those people who in their individual way contributed either directly or indirectly to the completion of this project.

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To God be all the Glory, Honor and Praise

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LIST OF ABBREVIATIONS AND ACRONYMS

CASA	-	Computer Assisted School Administration
CD-ROM	-	Compact Disk-Read Only Memory
DVD	-	Digital Video Disk
EMIS	-	Education Management Information System
ERSWEC	-	Economic Recovery Strategy of Wealth and Employment Creation
HELB	-	Higher Education Loans Boards
ICT	-	Information Communication Technology
IT	-	Information Technology
KEMI	-	Kenya Education Management Institute
KESSP	-	Kenya Education Sector Support Program
KNEC	-	Kenya National Examination Council
LAC	-	Latin American and Caribbean countries
MIS	-	Management Information System
MoEST	-	Ministry of Education, Science and Technology
NESSP	-	National Education Sector Support Programme
NCET	-	National Council for Education Technology
ROK	-	Republic of Kenya
SAS	-	Support Application System
TSC	-	Teachers Service Commission
UK	-	United Kingdom

ABSTRACT

There is increasing interest, attention and investment being put into the use of ICT in education all over the world. The Ministry of Education Science and Technology in Kenya has developed an Information Communication Technology (ICT) strategy which outlines how ICT will be adopted and utilized to improve access, quality and equity in the delivery of education services in Kenya. With the introduction of computer-based technology in schools, major changes should be observed in the way education is managed, but the changes are so small (Carnoy, 2004). The potential of ICT in administration of secondary schools in Kenya is not fully exploited (Kavagi, 2010). The purpose of this study was therefore to investigate factors hindering the utilization of ICT in the administration of public secondary schools in Kiambu Sub-County, Kiambu County. The study highlighted the availability of ICT infrastructure, the attitude of secondary school administrators towards ICT and their level of ICT skills. It also established the level of utilization of ICT in the administration of secondary schools. The findings of the study were intended to provide data on the state of ICT in secondary schools for effective administration. The researcher adopted descriptive survey design. The population for the study were 22 public secondary schools in Kiambu Sub-County. Stratified random sampling was used to select 12 out of the 22 public secondary schools according to the following strata: 3 County schools and 9 District schools proportionally. In each of the selected schools the Principal, deputy principal and five heads of academic department were purposively selected giving a sample size of 84 respondents. The researcher used interview schedule to collect data from the principals and questionnaires for deputy principals and heads of departments. The questionnaires were piloted in three schools. The questionnaires were dropped and collected on a later date as agreed with the respondents. Data collected was qualitative and quantitative. It was coded thematically and organized using statistical package for social sciences (SPSS) to come up with percentages, charts, frequency distribution tables and means. The study revealed that ICT as an administrative tool in secondary schools was not fully utilized. Computers were mainly used for clerical activities and to some extent processing examinations and making timetable. Factors that affected the utilization of ICT in school administration included lack of adequate training in ICT for administrators, inadequate finances to purchase computer hardware and software, insecurity and lack of ICT policy at the school level. The study findings suggests that, for successful utilization of ICT in support of secondary school administration, innovative strategies that include ICT training of administrators, formulation of a school ICT policy, the government providing finances to support the purchase of ICT infrastructure and taking insurance cover for the ICT facilities were necessary.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter contains the background to the problem, statement to the problem, research questions and objectives, significance of the study, limitations and delimitations of the study, theoretical and conceptual framework, and operational definition of terms.

1.1 Background to the Study

There have been constant reforms in education throughout the world. These reforms are prompted by the changes that are occurring every day in the political, social and economic sectors and they have made all countries to change in the way they embrace the use of computers. The world has become a global village through the use of modern means of communication and technology. No country wants to be left out or to remain an island (ROK, 2006).

Educational institutions in Kenya in the 21st century just as in other parts of the world are becoming complex organizations requiring tremendous input in terms of resources. As the secondary educational system is expanding so also are the problems of its planning, organizing, coordinating, controlling and directing which are to be performed by the school administrators. These developments require that educational institutions modernize their tools of trade in order to improve effectiveness in administration (Menjo & Boit, 2005).

One tends to agree with Mangal & Mangal (2009) who states that traditional method of administration appears to be far from what administrators need at this information age in order to bring about effective administration in schools. Information communication technologies (ICTs) have been increasingly incorporated into school administration in order to improve the organization of official data and to facilitate administrative transactions. Secondary school administrators must prepare for information communication technology of the 21st century.

Administration is a very important aspect of any organization without which no organization can run smoothly. According to Teklemariam (2009) and Wango (2009), administration is a social process concerned with creating, maintaining, stimulating, controlling, and unifying the organized human, financial and material energies within a system designed to accomplish predetermined educational objectives. Therefore educational administration deals with the running of educational institutions.

The job of the administrator is to organize and administer resources effectively and efficiently in order to achieve the school goals. He/she is expected to procure, organize and coordinate both physical and human resources. The administrator is involved in the performance of many administrative tasks which include management of staff and student personnel, community-school liaison, instructional and curriculum development, finance and business management and school plant management (Owen and Valensky, 2011). This calls for secondary school administrators to have ICT skills which will lead to efficient and effective administration.

Information Communication Technology (ICT) is a term used to cover any communication device used in the collection, storage, retrieval, use, manipulation, processing and transmission of information as accurately and efficiently as possible for the purpose of enriching the knowledge, developing communication, decision making and problem solving ability of the user. ICT is the use of hardware and software for efficient management of information for social, economic and cultural development (Mahapatra, 2009; Mangal & Mangal, 2009). A wide range of ICTs have been used in the delivery of education to improve access and administration. They include; radio, television, cameras, mobile phones, support application systems (SAS) and computers (ROK, 2006).

Computers were introduced in American schools in a limited number in the 1960s. The available computers were too cumbersome, too expensive and required formidable training. This led to slow acceptance and in many cases the rejection of the technology. A breakthrough for computer use in education came in the 1970s when desktop micro-computers became available. They were a variable technology in schools because of their low cost, the ease of use and the relatively small amount of training required to learn to use them. With the advent of high speed computers in the 1990s' computers became a permanent fixture in schools in the USA (Carnoy, 2004). Computers have been in use in Australian schools for teaching and administration since the 1970s (Crook, 1996). Unlike older technologies, computers can be put to different uses across many subjects including administration of institutions. A survey done by National Council for Education Technology (NCET) in 1994 involving a sample of 371 secondary schools in America indicated that 86% of the schools used IT to support a variety of administration, organizational and management tasks (Crawford, 1997).

While use of ICT in school administration continues to advance in Western and Asian countries, African countries are lagging behind. The introduction of computers in African schools is faced with many setbacks like lack of a national educational ICT policy, inadequate basic ICT infrastructure, low levels of ICT skills among school administrators and lack of funds. According to World Bank (2008), computer skills need to be introduced in Africa education because of its importance in modernizing the education system. Kavagi (2010) indicates that computers first came into use in Kenyan schools in the mid-1980s mainly through donations from friends in developed countries. Nairobi's Starehe Boys Centre was among the pioneer schools to use computers. From early 1990s more secondary schools in Kenya acquired computers for use in the institutions.

Since the turn of this century, the Kenyan government has been working towards the realization of transforming all education institutions in the country to be ICT compliant as attested by the interest shown on ICT in a number of government policy documents. These documents include Kenya Vision 2030 (2008), Economic Recovery Strategy of Wealth and Employment Creation (2003), National ICT policy (2006), MoEST strategic plan (2006), MoEST ICT policy (2006), KESSP (2005) and E-Government strategy (2004). The MoEST has initiated a National Education Sector Support Programme (NESSP 2013-2018) to operationalize sessional paper No. 14 of 2012 on Reforming Education and Training Sector in Kenya and the Basic Education Bill 2012, in line with 2010 Constitution of Kenya and the goals of Vision 2030. It is expected that NESSP will guide the next five years investment in education and training. NESSP will explore and build upon what was started by KESSP including integration of ICT in the education sector. Some of the objectives

of these policy documents are to encourage the use of ICT in schools, colleges, universities and other education institutions in the country so as to improve the quality of education services.

According to the then Minister for education Honorable Professor Sam Ongeri, the government required KSh7 billion to invest in ICT infrastructure in more than 6000 secondary schools across the country (Daily Nation, December 22, 2011:p8). The Minister for Finance in Kenya in the 2012/2013 budget allocated Ksh480 million for the purchase of computers for schools in an effort to meet the needs of ICT. This was Ksh200 million less than the previous year's allocation of Ksh680 million. Most rural public schools still have no access to computers. For those that have it is apathetic tale of over-stretched facilities (Daily Nation, June 26, 2012:p10). The government alone may not be in a position to provide computers in schools. With tight budgets and expanding roles, schools are also reluctant to make major investments in new technologies. The costs of computers are beyond what many schools can afford.

Wango (2009) notes that, the use of computers including the internet and the entire information system has been extended in education in the form of Education Management Information System (EMIS). EMIS is an organized way of collecting, processing and distributing education data for decision making. EMIS holds information on students and staff details, financial records, policies, curricular, visitors and property maintenance. Developing the capacities of education managers is critical for the management of education data. In a need assessment survey it was established that, with the exception of KNEC, TSC and HELB, the staff capacity to

use electronic based systems remains low thus resulting to manual processing of data at nearly all levels of the MoEST (ROK, 2005). This implies that there is need for school administrators to develop sufficient knowledge of computer basics such as word processer which helps in the production of high quality documents, spreadsheets which deals with arithmetical operations like analyzing examination and preparing report forms, and database which is used to store, manipulate and retrieve data.

A study done in Makueni District indicated that although all the principals felt that ICT was important in carrying out administrative tasks, results revealed that ICT was underutilized by principals in performance of management tasks in public secondary schools in the area (Mumbua, 2009). Data collected in Nandi North District indicated that there was shortage of computer hardware, with an average ratio of computers dedicated to administrative use being on average 1 computer: 15 users. In the schools under study computers were either located in the principal's office or computer laboratories making access by teachers difficult (Menjo & Boit, 2005).

A research done in Nairobi established that, problems hindering effective use of IT in management of secondary schools are lack of funds to provide enough computers, lack of electricity in some schools, expensive internet services, lack of well trained personnel in computer in schools and vandalism of computers by dishonest workers and thieves (Kanyeki, 2006).

From the above studies it is clear that the use of ICT for administrative work is very low in public secondary schools in Kenya. It is against this background that the researcher investigated factors affecting utilization of ICT as a tool in the administration of public secondary schools in Kiambu Sub-County, Kiambu County. The study focused on four major areas namely; ICT facilities, skills, attitude, levels of awareness and utilization of ICT by secondary school administrators.

1.2 Statement of the Problem

The arrival of digital technology in schools has impacted the roles and responsibilities of school leaders in significant ways. ICT offers new potentials that lead to significant changes in the structural area of the organization. There are new ways of distributing information throughout the organization and managing the school database. The MoEST is implementing ICT development projects to all schools in order to enhance productivity, effectiveness and efficiency in management system (Mutuma, 2005).

In its ICT Strategy the MoEST states that, while there are a wide range of innovations in ICT to support effective and quality delivery of education services and curricular, there is a considerable lag in education institutions to integrate ICT in their administration process. Most institutions still use nearly obsolete systems and are consequently unable to exploit the educational potential of the emerging technologies (ROK, 2006). There is need to integrate ICT in school administration with the aim of enhancing the school management process.

With the advent of high speed computers in the 1990s, computers became a permanent fixture in school offices. However there is very little evidence that ICT is widely used even where schools have ample computer hardware and software to improve productivity. It is evident that ICT is used less in education administration (Carnoy, 2004). This study sought to investigate factors affecting utilization of ICT in administration of public secondary schools in Kiambu Sub-County, Kiambu County.

1.3 Purpose of the Study

The purpose of this study was to investigate factors hindering the utilization of ICT and to establish how far ICT is being utilized in the administration of public secondary schools in Kiambu Sub-County, Kiambu County.

1.4 Objectives of the study

The specific objectives of this study were:

a) Asses the current status of ICT infrastructures in public secondary schools in Kiambu Sub-County
b) To find out the status of ICT literacy among secondary school administrators in Kiambu Sub-County
c) Establish the level of awareness of the advantages of using ICT as a tool of administration in secondary schools in Kiambu Sub-County
d) Determine the attitude of secondary school administrators towards ICT in Kiambu Sub-County
e) To find out how far ICT is Utilized in the administration of secondary schools in Kiambu Sub-County

1.5 Research Questions

a) Which ICT resources are available for use in administration of secondary schools in Kiambu Sub-County?

b) What is the level of ICT training of secondary school administrators in Kiambu Sub-County?

c) Are secondary school administrators in Kiambu Sub-County aware of the advantages of using ICT in administration by secondary schools?

d) What is the attitude of secondary school administrators towards the use of ICT in administration of schools in Kiambu Sub-County?

e) How far is ICT utilized in the administration of secondary schools in Kiambu Sub-County?

1.6 Significance of the Study

The study highlighted factors affecting utilization of ICT in secondary school administration. The findings of the study were of benefit to the MoEST in the formulation of future ICT policies aimed at enhancing the use of ICT in administration of secondary schools. For example knowing the level of ICT skills among school administrators will enable the MoEST to design ICT training programs to build the capacity of secondary school administrators.

The study offered recommendations that were of immediate benefits to the administrators by encouraging them to develop a school ICT policy in line with the ministry and national ICT policy. The findings added to the body of knowledge in the area of ICT and school administration and also provided a base for future studies.

1.7 Assumptions of the Study

In the proposed study, the following assumptions were made:

a) That there were factors affecting the utilization of ICT in the administration of public secondary schools in Kiambu Sub-County.
b) The respondents in the study sample gave a fair and unbiased representation of the study population.
c) School administrators were familiar with the National and the Ministry of Education Science and Technology ICT policy.

1.8 Limitations of the Study

The following were the limitations of the proposed study;

a) The study limited itself to Kiambu Sub-County, Kiambu County which is an urban setting. Thus research findings could be generalized only in urban secondary schools. For more conclusive results, rural secondary schools should be studied.
b) The researcher used questionnaires as the instruments of data collection and it was likely that some respondents may not answer the questions honestly. Therefore the results might not accurately reflect the opinions of all secondary school administrators.

1.9 Delimitations of the Study

a) Due to the large number of potential participants in the study population, the population involved in the study focused only on principal, deputy principals and heads of academic departments in public secondary schools in Kiambu Sub-County. Heads of non-academic departments, heads of subjects and prefects who

form part of the school administrative system were excluded. Thus the findings of this study can only be generalized with caution to all the school administrators.

b) The proposed study confined itself to public secondary schools in Kiambu Sub-County, Kiambu County. It was not possible to cover other districts in the county for it required considerable time and resources. Kiambu Sub-County is easily accessible by road.

c) The study only covered public secondary schools administrators in Kiambu Sub-County. Administrators of private secondary schools were left out since they had a different management procedure from their public counterparts.

1.10 Theoretical Framework

Socio-Technical Systems Theory

The study adopted the Socio-Technical Systems Theory which is part of the general systems theory. The theory was developed by a biologist Ludwig Von Bertalanffy in 1937 in Chicago. The theory views an organization as an integrated system of interdependent and interrelated structures and functions. In the open systems theory, the school is viewed as an open social-technical system composed of four major inter-dependent subsystems namely; structure, technology, task and people. These subsystems interact with the external environment in such a way that bringing change in one would lead to changes in all the others (Waweru, 2008).

According to Owen & Valesky (2011), the organization is structured, equipped and staffed appropriately to accomplish its mission. The organization must have technological resources and people who contribute to the task achievement. The four

internal organization factors; task, structure, technology and people are variables that are highly interactive, each tending to shape and mold the others. Significant change in one factor will result in some adaptation on the part of the other factors. A technological change, such as introduction of computers in a high school will require personnel with new technical skills. It may lead to change in the structure as a new department may be created. Technology is usually developed outside the school system. The school may either adapt it smoothly and easily, or it may resist technological changes (ibid).

The school as an open social technical system must embrace innovations that are taking place outside the school. Therefore when introducing ICT in schools, it is important to take into consideration the interdependencies between the school sub-systems with the external environment. The incorporation of ICT (external environment) into the day-to-day functions of educational institutions will have an impact on all the other subsystems in the school environment. The theory was chosen to guide this study due to its all-encompassing nature to get the total picture of the factors affecting the utilization of ICT in the administration of secondary schools. This allowed both the school's internal and external environment to be investigated for factors affecting utilization of ICT in the administration of secondary schools in Kiambu Sub-County.

1.11 Conceptual Framework

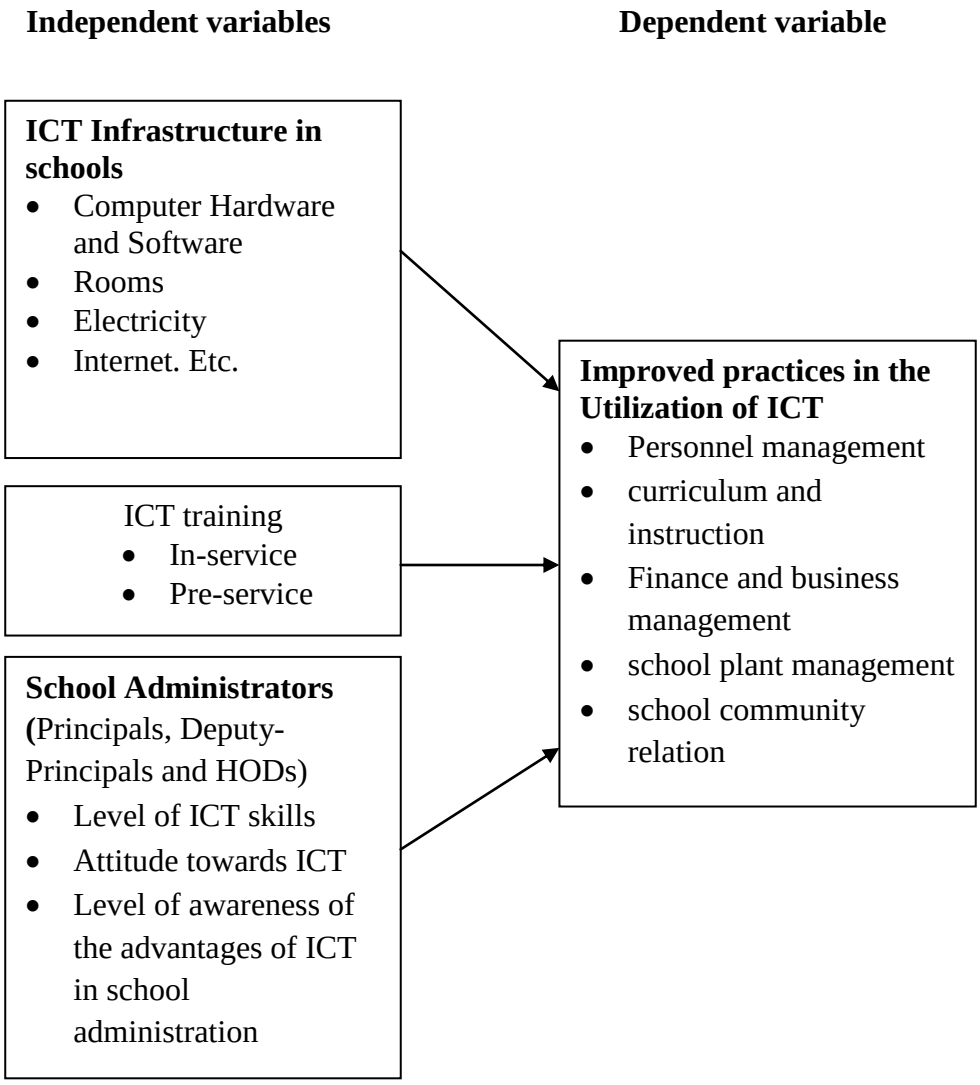

Figure 1.1: Conceptual Framework

Source: Researcher (2013)

The independent variables which include training of administrators in ICT, level of ICT skills among secondary school administrators, their attitude towards ICT combined with ICT infrastructure in school will influence utilization of ICT in the administration of secondary schools which is the dependent variable.

The conceptual framework showed that pre-service and in-service training in ICT will lead to better ICT skills, a positive attitude towards use of ICT and awareness of the advantages of ICT among school administrators. These combined with availability of ICT infrastructure are the independent variables which influenced the dependent variable which is improved utilization of ICT in performance of administrative tasks in Schools which include; school plant management, finance management, personnel management, community relations and curriculum instruction. Providing computers to schools is not enough to guarantee their use in administration. The ICT skills of school administrators determined the utilization of ICT in school administration. The attitude and level of awareness can be improved through training.

1.12 Definitions of operational terms

Administration It is concerned with directing and integrating education resources (human, material and financial) in order to accomplish education goals.

Computer Any electronic, magnetic, optical, or other high- speed data processing device.

Digital divide the gap that exist between those who are able to access and use ICT and those who are not.

Hardware it is the physical components that make up a computer system.

Heads of departments these are teachers who are in-charge of various departments in secondary schools.

Infrastructure refers to an integrated system of facilities used to provide one or more ICT services.

Internet interconnected systems of networks that connect computers.

Information Communication Technology- refers to the equipment such as computers, radio, television, internet, video, and digital cameras that enable the collection, processing, transportation, and delivery of information and communication services.

Public schools these are schools that get teachers and financial support from the government.

Principal refers to the head teacher charged with the responsibility of overall running of a secondary school.

School administrators Refers to the heads of school, deputy heads and heads of department in secondary schools.

Software these are programs in computer hardware which provide instructions that enable tasks to be performed by a computer.

Secondary school a formal institution of learning which starts from form One to form Four.

Universal access allowing everyone in the country to have access to ICT facilities within a reasonable distance and at reasonable cost.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Chapter two contains review of related literature on utilization of ICT in the administration of secondary schools. This was covered under the following headings: the availability of ICT infrastructure in schools, the level of computer skills among the school administrators, the attitude of school administrators towards ICT, levels of utilization of ICT in administration of secondary schools and the research gap.

2.1 ICT Infrastructures in Secondary Schools

The schools technical subsystem is shaped by the following elements: knowledge, techniques, facilities and equipment. Each of these elements should be adapted selectively to suit the special requirements of the school and to make use of the appropriate technology. This will involve the preparation of computer sites, purchase, introduction, operation and maintenance of hardware and software (Mahapatra, 2005).

According to Mutuma (2005), ICT is the use of electronic equipment and other accessories like computer hardware and software and other telecommunication equipment to acquire, store, process and disseminate information. He notes that the MoEST is implementing ICT projects to all schools based on three main policies namely; accessibility and literacy of ICT to all students, role of ICT in the curriculum as a learning tool and the role of ICT in enhancing productivity, effectiveness and efficiency in management system.

While developed countries have advanced in equipping schools with ICT infrastructure, it is not the case with schools in developing countries. A research which was done in the United States of America showed that 92% of people under the age of 60 have used computers and 72% have used the internet. Between 1994 and 2000, the proportion of public schools connected to the internet increased from 35% to 98%. Developing countries are unable to afford large-scale national school computerization programs without increasing educational budgets. Most Latin American governments spend relatively little of their education budgets on educational technology. Internet access and cost issues for education are high in most Latin American countries (Siddiqui, 2007).

A research done in 2012 by the World Economic Forum in Singapore indicates that Kenya has slipped in global ranking of technology competitiveness. It was ranked 93 out of 142 nations surveyed – a 14- position decline from 2011 level of ranking. Poor connectivity rate, wanting regulatory frame work, and low ICT skills have seen the country slip from its previous position. Mauritius was the best ranked African country at 53rd position. It was followed by South Africa and Cape Verde in the 72nd and 81st positions respectively. Rwanda was position 82 and Uganda 110. Tanzania and Burundi were ranked 123rd and 137th respectively (Daily Nation, April 17, 2012:p3).

Table 2.1: Computer penetration ratios at schools in selected African Countries by year 2007

Country	Schools	Schools with Computers	% of schools with computers
Egypt	32,000	10,000	31.25%
Ghana	32,000	800	2.5%
Mozambique	7,000	80	1.1%
Namibia	1,519	350	22.1%
South Africa	25,582	6651	22.6%

Source; Farrel, 2007

According to Wango (2009), computers can be expensive to buy and maintain. The programs are even more expensive such as a specific program on schools. The tendency among most schools is to look at the initial cost and forget the running costs. The initial costs include computer hardware and software, installation and wiring. The running costs includes maintenance and repairs, licenses for programs, insurance for hardware, electricity and storage disks. For computer systems to function properly constant proactive, reactive and restorative maintenance strategies must be employed at all levels of management.

The lack of suitable hardware and software is the greatest hindrance to utilization of computers in schools. The problem of incompatible computer hardware and software is common where the local computer industry is not well developed. Developing nations represent 85% of countries in the world that use pirated software. This is due the high cost of new legally acquired imported software and the lack of local software industry that could make cheaper programs tailored to local markets (Kavagi, 2010).

A good number of school in Kenya have benefited from used donated computers which are hard to maintain. It's possible to see a school's computer laboratory full of broken down computers. Boit & Menjo (2005) indicated that 60% of the schools were beneficiaries of computer donations from well-wishers from within and without the country. Donated computers could not run the latest software such as windows 2003. They recommended that purchase of computers and administrative software should be budgeted for and acquired by the schools to avoid undue reliance on donated computers and software. Schools should engage an expert when acquiring computers to advise them on the best type of hardware and software. From the reviewed literature it was clear that schools in developing countries not only lack adequate ICT infrastructure but also lack latest computer hardware and software. Technical and financial problems must be tackled for any ICT utilization program in schools to succeed. The researcher sought to find out whether schools are equipped with right type of ICT hardware and software.

2.2 ICT Skills and School Administrators

Administration is the process of working with and through people in order to achieve organizational goals. School leaders play a key role in administrative functions which include goal setting, making decisions, building relationships and establishing an effective management structure (Owen & Valesky, 2011; Tranter, 2006). According to Wango (2009), administration is the activity that directs action of staff to work towards meeting the organizational goals. The work of school administrator is to ensure that specific duties are assigned and performed, and there is a continuous feedback to improve on overall school management.

According to Mujibul (2004), technology is helping to change education but without strong leadership not every student or member of staff will enjoy the advantages of technologies. Schools will fall further behind the society that is surrounding them. Lunenburg (2005: 204) states that, new technologies require the development of knowledge to implement. New technology will require school leaders to upgrade and refine their technological skills. A research which was done in the United Kingdom (UK) on the implementation of ICT in three government maintained mixed secondary schools showed that, teachers needed support in identifying their ICT training needs. Whole school training days were reported as influential and emphasis on ICT use in the initial teacher training courses was noted to have impact on more recently qualified staff in all the 3 schools under study. Teachers also need to be aware of what technical support is available and how to access it (Tearle, 2004).

The use of computers is becoming widespread in education and training. Computers have become an integral part of education institutions. However the task of undertaking a computerization project in a school is challenging to most administrators as ICT is a relatively new field (Kavagi, 2010). School administrators face a huge task of managing schools in a society that has been transformed by technologies and many feel overwhelmed by the mandate to integrate ICT in schools. School administrators are required to assume leadership responsibilities in areas they are unfamiliar with and for which they have little training. School leaders need to develop new competencies in order to be effective in their new roles as technology leaders in managing the use of ICT in schools (Mutuma, 2005).

One tends to agree with Adams (1985) who states that being computer literate may become as important as being literate in the more traditional sense. Computer literacy means being able to cope comfortably and effectively with computer technology. Levels of computer knowledge include awareness, literacy, application and innovation. Teachers should strive for application level in order to use computers successfully (Siddiqui, 2007). It's important to training administrators and staff designated to work with the new technology. To effectively manage the use of computers, administrators must have basic competencies like being able to choose applications that are appropriate for a given school situation, select the best software and hardware and develop implementation plan for computer application (Ray and Davis, 1991).

According to Crawford (1997), Schools should encourage teachers to develop their ICT skills. It is advisable to reserve some ICT resources for staff only. The staff ICT room should be equipped with the suitable hardware, software and ICT learning resources to train staff on ICT skills. If teachers can see that what is done can be done more thoroughly and effectively using ICT, then they will spend more time developing their ICT skills. Schools should hire ICT technician to assist teachers in familiarizing with both the theory and applications of computers.

Barta, et al (1995), observed that introduction of ICT into the traditional school structure have run into difficulties because computers are not fully effectively used. Proper school employee preparation programs are a pre-requisite for ICT successful assimilation. Training activity should take place prior to ICT implementation and subsequently on an on-going basis to familiarize administrative staff with hardware

and software changes and recent developments. The greatest challenge facing the Ministry of Education in Chile is the need to in-service teachers, especially in the effective use of new technologies. Several Latin American and Caribbean countries (LAC) are providing professional training in the use of the new technologies (Siddiqui, 2007).

The future direction that computer technology may take needs to be evaluated so that teachers can prepare for an ever-changing technological world (Adams, 1985). Director of Microsoft East and Southern Africa Channel, Eric Odipo states that "it's not that there is a shortage of trained IT people coming out of colleges, but that the IT environment changes at such a fast rate that universities are not able to keep up as they lack the latest of this technology. Nearly every six months there is something new coming from Microsoft and computing companies". That's why various organization involved in ICT are re-training fresh graduates (Daily Nation, July 23, 2012:p1).

Mutuma (2005) notes that, school leaders command of technology is important because leaders who are computer literate are more aware of their staff member's ICT needs. Learning the basics of word processing, spreadsheets, presentation software, using web page and internet are prerequisite to boost their computer skills. In a study done in Kilungu Division, Makueni District revealed that about 52% of the teachers and principals acquired computer knowledge from friends. Only 16% of the principals had a certificate from a computer college (Mumbua, 2009). In a research study done in Nairobi most principals suggested that the MoEST should make it mandatory for all school principals to be trained in IT before taking over

leadership responsibilities and the government should provide resources for training. They also suggested that IT to be included in the teachers training curriculum (Kanyeki, 2006). The slow uptake of computers in Kenyan schools can be partly attributed to inadequate human resource capacity at all levels. Schools need skilled technicians to maintain and repair computer hardware and software and support teachers.

According to Daily Nation (August 31, 2012: pVII), Kenya Education Management Institute (KEMI) has been at the forefront of building the capacity of education administrators/managers on ICT integration under the Economic Stimulus Program. KEMI director Dr. Wanjiru Kariuki has expressed the organizations commitment to bridging the digital divide in the education sector. In its ICT strategy the MOE has outlined a training program for the entire MOE, its agencies and institutional managers in the area of Education Management Information System (EMIS). The teaching staff force of about 240,000 teachers will be trained in ICT literacy and integration (ROK, 2006).

Training is one aspect of people-ware that never ends. Most teachers training programs have not incorporated ICT in their core curricula, hence majority of the teachers are not well equipped with relevant ICT skills (Kavagi, 2010). Training of administrators in application and administrative software programs for school administrative needs should be undertaken by the schools and the universities training teachers (Menjo & Boit, 2005). Kenyatta University (KU) is offering both in-service and pre-service IT courses to trained and trainee teachers respectively. It should be possible to develop computer basics and use the most common computer

applications to meet the initial training needs of school administrators. In order to stay ahead and become a competitive person, a school leader needs to keep abreast with the latest technology.

From the reviewed literature it was clear that principals and teachers in public secondary schools in Kenya were not literate enough to use computers. School administrators also felt overwhelmed by the fast changes occurring in the technology world. That's why there was need to keep on offering in-service courses to school administrators in order to cope with technological changes. Lack of training for administrators in ICT was a major drawback in their ability to utilize the technology. The researcher embarked on ascertaining the level of ICT skills among secondary school administrators and establishing whether schools had put in place mechanisms to help teachers acquire ICT skills to help them cope with the fast changing ICT world in order to be able to utilize modern technologies in the administration of secondary schools in Kiambu Sub-County. The study also made recommendations to the MoEST to come up with an ICT training program for secondary school administrators.

2.3 Levels of Awareness of the Advantages of ICT by School Administrators

Lack of awareness of the advantages of ICT in school administration should be considered in any attempt to introduce computers in school. Lack of policy over computer use in school management is one of the barriers to the use of IT in schools. Adams (1985), states that awareness must be developed among decision makers at all levels in the area of availability of resources and the power of micro-computers. Principals must be educated on how record-keeping, test-generation and word

processing computer programs can help them in their daily lives. Encouraging a computer culture to develop will gradually enable teachers to embrace the use of computers in such a way that when it is removed they feel something important is missing.

According to Wango (2009), there are several advantages of using computers in school management. Computers allow data storage and easy access to data. Less time and money is spent on administration. Information is available more easily and it can help to enhance research and delivery of education resources. Computer technology is an efficient cost-effective tool of administration. It is possible to store over 900 type written A4 pages on a small inexpensive diskette. There is also saving on small space required to store data on computer compared with space occupied by a similar paper-volume of information. The cost of storing content is negligible compared to paper. The information stored on paper cannot be copied without loss in quality due to the reproduction process. With the storage media such as Digital Video Disk (DVDs), CDs, flash disks, hard disks, and tape drives the quality of the copy made from data stored on computer is the same as that of the original (Kavagi, 2010).

The advantages of using IT for school administration are obvious when schools are committed users of comprehensive management information system (MIS). Tasks are done more often, as they can be done faster and with less effort using IT. It is easier to update information any time. Record keeping is more orderly and reliable. Mistakes can be minimized by the use of self-seeking software. Reports generated by an IT based system are more reliable and flexible (Crawford, 1997). Management

information system (MIS) is a set of computer based system designed to improve the managerial decision making process that involves collection, organization, distribution and storage of information for analysis and control (Dahiya, 2004). ICT makes it possible to perform tasks that would be difficult with manual system like sorting data into different order, extracting part of the data, or updating the data. This helps to save time, money and space.

A research done by Mumbua (2009) showed that, all the principals under study reported that computers were extremely important in their administrative work. The use of ICT ensures efficiency in the management and utilization of school resources, steps up accuracy and speed of handling data, enhances decision making process, ensures easy access of information and leads to lower manpower requirement. Another research by Menjo & Boit (2005), indicated that 93% of those under study felt that ICT shortens time taken to accomplish task while 96% were in agreement that the quality of work was better than before. 70% of respondent were of the opinion that it had increased free time available for them to perform other worth-while school duties.

According to ROK (2005), the MoEST recognizes the critical role of education management system (EMIS) in the provision of timely, reliable and accurate education data. EMIS facilities have been established at TSC and MoEST headquarters to support processing of school data returns. The overall objective of the EMIS component is to establish effective and efficient systems and infrastructure that support harmonious data collection, processing and dissemination for education planning and management.

Although the advantages of using ICT for school administration are obvious most schools have not changed from manual to ICT based management information system. The study wanted to find out whether school administrators in Kiambu Sub-County were aware of the advantages of using ICT as a tool in the administration of secondary schools.

2.4 School Administrators and Attitude to ICT

According to Wikipedia (2013), an attitude is a favorable or unfavorable evaluation of something. Attitudes are positive or negative views of a person, place, thing or event. Crook (1996), states that pessimism is the familiar enemy of innovators. The obstacles of integrating ICT in schools are within the attitudes of the teachers. There is a lack of self-assurance and confidence by teachers when using the technology. Effective implementation of the technology will involve instilling confidence in the teacher. Case studies done in three fully residential schools in Malaysia on Computer Assisted Administration (CASA) revealed that only staff attitude is perceived to be a crucial success factor of CASA implementation (Zaini, 1997).

According to Kavagi (2010), studies show that among educational administrators, the positive attitude towards use of computers is strongest when the role of computers in school management is made clear. The attitude of school administrators towards ICT determines the speed, spread and depth of computer usage in education. School administrators also perceive the introduction of computers as boosting the institution's image and prestige as a modern school. Mburu (2008), notes that successful implementation of any education program is users' acceptance, which in turn is influenced by users' attitude. Attitude has been

found to be a predictor of the adoption of new technologies such as computers. The successful integration of technology and the push to make education more relevant in the 21st century requires teachers with the right competence, values and attitude (Daily Nation, November 4, 2011:p13).

In a group of trainees there are a few people who suffer from technophobes. This is deep rooted fear that one cannot work with technology. It's necessary to encourage trainees to think of computers as tools of for doing a job. As a tool there is no need to understand exactly how it works but the only knowledge necessary is how to use the tool and how to maintain it properly. People are always taking new challenges that seem impossible at first. They only need to be persistent enough (McDowell & Race, 1998). Kavagi (2010) notes that, many people fear computers. This fear can be overcome through direct interaction with the computer in day-to-day activities. Studies show that most of the fear stems from the perception that computer is a science subject. It is natural for people to prefer longstanding practices to innovations. There is the issue of stereotyping where school administrators see the computer as another typewriter hence its use is likened to turning the boss into the school secretary. Men feel that they should not be doing typing work as this is a woman's occupation.

The outcome of a study carried out in Nandi North District showed that attitudes of school administrators towards implementation of ICT in secondary schools were generally positive with an overall mean of 4.06 on a scale of 1 to 5 (Menjo & Boit, 2005). A research done in Nairobi indicated that the perception of secondary school principals on the use of ICT was still very low. The perception of school

administrators on the use of ICT in school administration will determine its success (Mumbua, 2009).

There was a strong perception especially by the older generation that computers require highly skilled personnel to operate them. Some feared the infection of viruses to their computers leading to data loss. Proper education on the safe use of computers could alleviate some of these fears. With the different views given about the attitude of school administrators towards the use of ICT in schools, the researcher wanted to find out the attitude of secondary school administrators in Kiambu Sub-County and how it affected utilization of ICT in administration of secondary schools in the area.

2.5 Utilization of ICT in the Administration of Secondary Schools

A research done in the UK indicated that there was 97% agreement that respondents could use computer for administrative role (Tearle, 2004). The global society is increasingly depending on computers and telecommunication to accomplish its work, provide entertainment and make contact between people. As these infrastructures become available in schools, technology can be used to improve communication between ministries and local educators by efficiently handling and communicating data in a timely fashion (Siddiqui, 2007). School management information systems are being designed and implemented to provide administrators with new tools to support them in a variety of activities like grade and attendance reporting, construction of school timetables and examination schedules, assignment and disbursement of resources, follow up on the decisions, analysis of teacher and school achievements (Mahapatra, 2005).

Olembo, Wanga & Karagu (1992), identify six major administrative tasks for Secondary school administrators. They include; curriculum and instruction, Provision and maintenance of physical facilities, student personnel management, staff personnel management, finance management and school community relations. The head teacher as the chief administrator and other educational administrators at various levels has varying supervisory responsibilities in each of these task areas. Crawford (1997) indicates that some administrative and management tasks can be done effectively using general purpose software such as graphics, word processing, desktop publishing, database and spread sheet software. Teklemariam (2009), notes that, many of the processes that occur in offices depend on computers. Computers have simplified many of the tasks performed in the work place. School managers should take advantage of the huge range of technology and systems available to assist in doing work. It is therefore important for a school administrator to access and use modern technology to perform a variety of tasks. This implies that, having the right kind of ICTs in schools will help administrators have access to data and use it for accountability and decision making process.

Administrators of today's schools have a responsibility to become sophisticated about the use of computers and to apply this knowledge to the administration of schools. The amount of information that needs to be managed in a school system has grown tremendously. Administrators are responsible for computer usage to implement administrative and instructional goals in school (Ray & Davis, 1991). A research done in Nairobi showed that all the 35 principals in the study indicated that IT was very important in personnel management which included students and staff records, recruitment of staff, selection and assigning of duties. They also indicated

that IT was extremely important in financial management of schools and management of instructional program (Kanyeki, 2006).

Kavagi (2010) indicates that computers can be used to improve the quality of school administration in various ways. Using the computer for correspondences has the advantage in that the text can be manipulated in different ways and spelling can be checked and corrected, hence improving the quality of the school's correspondences. If the school is connected to the internet it is possible to send e-mail which is cheaper than postal service. One can make an order for supplies right from their office computer by sending local purchase orders through e-mail. Likewise suppliers can send their invoices by e-mail. Parents can be sent quality brochures, newsletters and student progress reports. This saves on manpower and the time spent away from school.

According to Crawford (1997), information about students can be stored in computers. This includes the students' social and academic records. It's easier to track the progress of a student using the computer. Personnel records can be kept for all staff. Timetabling software can automatically allocate teachers lessons and shortfalls identified. Finance and budgeting software can be used to show how much fees each student has paid and the balanced owed. It also monitors spending against the budget. An accounting software program can help to easily and quickly generate trial balances and other financial report. An inventory of all resources, assets and equipment can be maintained. Tenders and contracts can be monitored and reviewed giving the full cost of items. Library automation software can be used to organize

the borrowing of books and other resources from the school library or other resource centers within the school.

Siddiqui (2007) argues that, many governments stand at the threshold of the 21st century without clearly defined plans and strategies about the use of educational technology. Schools should have an IT policy and a plan for its implementation. An IT school policy is a statement of beliefs, values and goals of using IT in the operations of a school. It should provide targets for the overall development of IT within the school. From the National ICT policy the next level is the MoEST ICT policy that defines the goals and objectives of ICT in education. The MoEST ICT policy guides the development of educational ICT policy at school level. Lack of a clear ICT policy stifles the use of computers in education (Kavagi, 2010).

From the literature review it emerged that ICT could be of great benefit to school administrators in carrying out administrative tasks. However in the Kenyan context, even where computers and the necessary equipment were available the rate of uptake was quite slow. Therefore this study wanted to fill this gap by investigating factors that affected utilization of ICT in administration of secondary schools in Kiambu Sub-County. The study sought to establish whether secondary schools in Kiambu have an ICT policy in line with the MoEST and National ICT policies.

2.6 Research gap

It is now accepted that computers should play a central role in school administration. However, progress has generally been limited to computer assisted instruction and learning. In addition to instruction and learning another major area that can benefit from the use of computers is educational administration and organization. Less attention has been paid to the topic of ICT and administration (Barta et al., 1995). It was well recognized that there was limited research in Africa and specifically in Kenya to identify and address key challenges that stand on the way of adoption and use of ICT in general and particularly in education sector (ROK, 2006).

At present, most of the research have focused on the impact of ICT on student and how it is enhancing teaching and learning, challenges and success of ICT in teaching of mathematics in primary and secondary schools in Kenya (Kamau, 2012; Kithinji, 2008). In secondary schools research has been conducted in the use and impact of ICT in administration in Kilungu and Nairobi (Mumbua, 2009; Kanyeki, 2006).

Although many secondary schools in Kenya introduced computers in great numbers starting early 1990's there is limited data on their use to facilitate school administration. There is little research on factors affecting the use of ICT as a tool in the administration of secondary schools. Due to this glaring gap this study was designed to investigate factors affecting the utilization of ICT in the administration of secondary schools in Kiambu Sub-County.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter describes the research design the researcher used to conduct the study. It included the location of the study, target population, sampling procedures, description of research instruments, data collection technique and data analytical plan.

3.1 Research Design

The study adopted an exploratory approach using a descriptive survey design to investigate factors affecting the utilization of ICT in the administration of secondary schools in Kiambu Sub-County. Orodho (2009) states that, survey study gathers data at a particular point in time with the intention of describing the nature of the existing conditions. Descriptive survey design can be used when collecting information about people's attitudes, opinions, habits or a variety of education or social issues. According to Nkpa (1997), descriptive studies are concerned with either describing or interpreting existing relationships, attitudes, practices, processes and trends or comparing variables.

The study investigated ICT infrastructure in public secondary schools, levels of ICT skills among school administrators, their attitude towards ICT and levels of utilization of ICT in administration of secondary schools.

3.2 Location of the Study

The study was carried out in Kiambu Sub-County, Kenya. The researcher chose Kiambu Sub-County because of its accessibility, proximity to the researcher and the researcher's familiarity with the area. There was also an assumption that due to its proximity to Nairobi and its high wealth index, there was a probability that the schools in Kiambu were equipped with computers and relevant skills. Kiambu Sub-County borders Nairobi to the South, Ruiru Sub-County to the East, Githunguri to the North and Limuru to the West. The Sub-County has a total area of 189.1 Km^2.

3.3 Target Population

"All the items or people under consideration in any field of enquiry constitute a targeted population" (Orodho, 2010:p37). The target population were the principals, deputy principals and heads of departments in 22 public secondary schools in Kiambu Sub-County. This consisted of 22 principals, 22 deputy principals and 110 heads of academic department which was a total of 154 persons (MoEST, 2013).

3.4 Sampling and Sample Size

The study used stratified simple random sampling to select the schools from which principals, deputy principal and heads of department who participated in the study were drawn from. Stratified random sampling helps to achieve the desired representation of various subgroups in the population. This guarantees that the resulting sample will be proportionate to known sizes in the population (Mugenda & Mugenda, 1999). Public secondary schools in Kiambu Sub-County were grouped in to two strata; County and District schools. During the time of the study there were 5 county schools and 17 District schools giving a total of 22 public secondary schools.

The researcher used 50% and Simple random sampling to select 3 County schools and 9 District schools yielding a total of 12 schools out of the 22 schools in the Sub-County. Each stratum contributed to the sample a number that is proportional to its size in the population (Orodho, 2009). This ensured that every school in each stratum had an equal chance of being selected for the study (Mugenda & Mugenda, 1999). Each principal, deputy principal and five heads of academic departments from the selected schools were purposively selected to participate in the study. These were 12 principals, 12 deputy principals and 60 heads of academic departments giving a sample size of 84.

Table 3.1 Sample Size for the Study

Category	Target Population	Sample Size (n)	Percentage (%)
Secondary Schools	22	12	54.4
County Schools.	5	3	13.63
District Schools.	17	9	40.9

Source: MoEST, (2013)

3.5 Research Instruments

The researcher used two types of research instruments in this study. They included; principals' interview schedules and questionnaires for deputy principals and HODs.

3.5.1 Interview Schedule for principals

The data from the principals was collected using an interview schedule. An interview schedule allows a face to face encounter with the respondent and the researcher is able to obtain in-depth data which is not possible to get using a questionnaire. It also yield high response rate (Mugenda & Mugenda, 1999). Interview schedule was very appropriate as it made it possible to obtain data required to meet specific objectives of the study. The instrument gives room for probing. The principals' interview schedule consisted of five sections. Section A sought general information of the respondent; age, gender, professional qualification, years one has been principal and type of school. Section B dealt with information about availability and maintenance of ICT infrastructure in schools and how they were acquired. Section C contained items designed to get information about levels of ICT skills and expertise among principals. Section D sought information about principals' attitude towards the use of ICT in a Likert five point scale i.e. (5) strongly agree, (4) agree, (3) undecided, (2) disagree and (1) strongly disagree. Section E sought information about advantages of ICT in school administration and how far ICT was being utilized in the administration of secondary schools in Kiambu Sub-County.

3.5.2 Questionnaires for deputy principals and HODs

Questionnaires are commonly used to obtain important information about a population (Mugenda & Mugenda, 1999). They permit a greater depth of response. Questionnaires save time, are less costly, are easy to administer and analyze (Thomas, 2009). There was a questionnaire for deputy principals' and HODs. The deputy principal and heads of department questionnaires sought demographic and

general information of the respondent in section A. Section B sought information about availability of ICT infrastructure in their offices. . Computer literacy and expertise were covered in section C. In section D and E they indicated their attitude towards the use of ICT and the extent to which they use ICT in their administrative work on a five point scale respectively.

3.6 Piloting of the Research Instruments

The researcher pre-tested the questionnaires in three schools in Kiambu Sub-County. The three schools were purposively selected, that is one county and two district school. The three schools were not included in the actual study. The questionnaires were administered to deputy principals and heads of departments. According to Orodho (2010:p41), piloting of data collection instruments is important because it checks on ambiguity, bias, poor layout, if the wording is clear and check the answers to each question and see if they are supplying the appropriate information. Pre-test helps in enhancing the reliability of the instrument (Mugenda & Mugenda, 1999).

3.6.1 Validity of the Research Instruments

Validity is the degree to which results obtained from the analysis of the data actually represent the phenomena under the study. “Validity has to do with how accurately the data obtained in the study represent the variables of the study. Validity is concerned with establishing whether the questionnaire content is measuring what it is supposed to measure” (Orodho 2010:p41).

To ensure validity the instruments were tested through content and face validity. Content validity is the extent to which the items of an instrument are representative

of the content and behaviors specified by the theoretical concept being measured (Nkpa, 1997). The researcher arrived at content validity through the results and comments of pilot study. The questionnaires were assessed by my colleagues and my supervisors to ascertain the validity. Their recommendations were incorporated in the final questionnaires.

3.6.2 Reliability of research instruments

According to Thomas (2009), reliability refers to the extent to which a research instrument will give same results on different occasions. It is the degree to which a measure supplies consistent results (Mbwesa, 2006). A reliable instrument yields the same results for the same individuals regardless of when it is administered.

To ensure reliability the researcher used the test-retest method. This involved administering the same instrument twice to the same group of subjects. There was a two weeks lapse between the first test and the second test. The questionnaire responses were scored manually. A Pearson's product moment formula for the test-retest was employed to compute the correlation coefficient in order to establish the extent to which the content of the questionnaire were consistent in eliciting the same response every time the instrument was administered. A Spearman rank order co-efficient of 0.78 was obtained, which was considered large enough to judge the instrument as reliable. A correlation coefficient (r) of about 0.75 should be considered high enough to judge the instrument as reliable for the study (Orodho, 2009).

3.7 Data Collection Techniques

The researcher sought written permission to carry out the proposed research from the Ministry of Education Science and Technology. Authority was sought from the County Director of Education to carry out research in Kiambu Sub-County. The researcher also sought permission from the principals of the sampled schools after which the schools were visited for the administration of the questionnaires. Careful instructions were given to the respondents on how to fill the questionnaire. The questionnaires were dropped and picked on a later date as agreed with the respondents. The researcher ensured confidentiality of the information in the questionnaires.

3.8 Data Analysis and Presentation

Mugenda & Mugenda (1999), states that data obtained from the field in raw form is difficult to interpret. The data must be cleaned, coded, key-punched into a computer and analyzed. From the results one is able to make sense of the data. The researcher went through the process of data editing and cleaning to make sure that all the questions on the questionnaires were answered and the answers were properly recorded. The researcher checked for accuracy of the answers and uniformity in the interpretation of questions. Then the data was coded to simplify its' entry.

The collected data was both qualitative and quantitative. Qualitative data was analyzed by establishing relationships between variables. The data was organized into themes and according to research questions and objectives. Quantitative data was analyzed using descriptive statistics. Data was tabulated and presented descriptively using frequency tables, graphs, percentages and charts. The Statistical Package for Social Sciences (SPSS) programme was used to organize the data.

CHAPTER FOUR

DATA RESULTS, ANALYSIS AND DISCUSSION

4.0 Introduction

This chapter presents the data collected through questionnaires and interview schedules. The purpose of this study was to investigate factors affecting utilization of ICT in administration of secondary schools in Kiambu Sub-County, Kenya. The results were interpreted and based on the following themes which were raised in chapter one: availability of ICT infrastructure, ICT skills among secondary school administrators, attitude of administrators towards the use of ICT and utilization of ICT in the administration of secondary school. Frequency tables, percentages and means were used to give a general picture of the responses.

The study was conducted in twelve public secondary schools in Kiambu Sub-County. The subjects of the study were twelve principals, twelve deputy principals and sixty heads of academic departments giving a total of eighty four (84). The researcher administered questionnaires to deputy principals and heads of department and conducted interviews with the principals. Twelve principals, twelve deputy principals and fifty three HODs responded giving a total of seventy seven (77). Seven HODs did not respond to the questionnaires.

4.1 Demographic and General Information

Presented in this section are findings on details of the respondents' gender, age, teaching and administration experience and professional achievements of the 77 principals, deputy principals and HODs. The details are shown in the table 4.

Table 4.1 General information of Principals, Deputy Principals and HODs

CATEGORY	FREQUENCY (N=77)	%
Gender		
Male	32	41.6
Female	45	58.4
Total	**77**	**100**
Age(years)		
20-30	2	2.6
31-40	18	23.4
41-50	45	58.4
51 +	12	15.6
Total	**77**	**100**
Number of years one has been a teacher		
Below 10	5	6.5
10-20	40	51.9
21-30	29	37.7
31+	3	3.9
Total	**77**	**100**
Administrative experience		
Below 10	55	71.4
10-20	19	24.7
21-30	2	2.6
31+	1	1.3
Total	**77**	**100**
Academic/professional qualification		
Masters	13	16.9
Bachelors	58	75.3
Diploma	5	6.5
Any other	2	1.3
Total	**77**	**100**

The findings indicate that 58.4% of the principals, deputy principals and HODs were female while male formed 41.6%. The study found that 74% of the principals, deputy principals and HODs were above 40 years while 26% were below 40 years. On their teaching experience the results indicated that about half of them 51.9% had an experience of between 10-20 years, while 6.5% had taught for less than 10 years. Only 3.9% had taught for over 30 years. The results revealed that 71.4% had an administrative experience of less than 10 years, while 24.7% had an administrative experience of between 10-20 years. The findings indicated that 75.3% of the above administrators had a Bachelor's degree as their highest academic qualification, while 16.9% had a Masters.

Demographic and general information was meant to identify the various characteristics, experience and working environment of the respondents. The study found that there were more female administrators in Kiambu public secondary schools than males. This contrasts the findings of a study by Mumbua (2009), Kanyeki (2006) and Menjo and Boit (2005) which indicated that most of the administrators were male in Kilungu, Nairobi and Nandi North respectively. Khan (2012) states that, in most developing countries like Bangladesh and Malaysia women are under-represented in every aspect of ICT implementation. Men disproportionately occupy academic, management and technical roles, which provide easier access to ICT. In Kiambu Sub County more women are taking up administrative roles which means by the virtue of the nature of their work they will have easier access to ICT. This information was important in finding out gender participation in administration and their response to the use of ICT.

The study found that a large percentage of the administrators were above the age of 40years while very few were below 40 years. The information was necessary to assess responses of various age groups to the utilization of ICT in administration as it is believed that the aged are reluctant to embrace technological changes due to their familiarity with certain traditional administrative styles (Kavagi, 2010). Carnoy (2004) indicated that part of the problem of teachers and administrators discomfort with ICT may go away as their age falls. Young teachers, raised in the information age will embrace ICT easily. Those above the age of 40years went to college before ICT was integrated and will require more training. The study found that majority of the principals, deputy principals and HODs had a Bachelors' degree and above which was an indication that they were professionally trained and highly qualified. This meant that they could quickly learn to utilize ICT.

4.1.1 Types of School and Student Enrolment

The researcher sought information from principals on the school categories and the number of students enrolled in each school. The details are shown in table 4.2

Table 4.2 Types of Schools and Number Students Enrolled

Category	**Frequency (n=12)**	**%**
Type of school		
County	3	25
District	9	75
Total	**12**	**100**
Enrolled students		
100-300	1	8.3
301-600	8	66.7
601 +	3	25
Total	**12**	**100**

In response to the school categories, 75% were districts schools, while 25% were county schools. The results revealed that 66.7% of the schools had an enrolment of between 301-600 students, while 25% had over 600 students. Only 8.3% school had a student population of below 300. Majority of the schools under the study recorded a student enrolment of between 300 and 600. Schools with a student enrollment of above 600 were County schools. It is believed that a high student population attracts even a higher staff indicating enormous administrative tasks hence the need to utilize computers (Teklemariam, 2009).

4.2 Availability and Maintenance of ICT Infrastructure in Secondary Schools

The first objective of the study sought information on the availability of ICT facilities in secondary schools, how the technology was acquired, operating systems used in the computers, reliability and accessibility of ICT facilities and challenges faced by principals in acquiring ICT facilities in Secondary schools.

4.2.1 Availability of ICT Facilities in Secondary Schools

The principals, deputy principals and HODs were asked to indicate the ICT facilities available in their schools. The results are analyzed in table 4.3.

Table 4.3: ICT Facilities in Secondary Schools

Facility	Available& adequate (N=77)	%	Available& inadequate (N=77)	%	Not available (N=77)	%
Computer for office	53	68.8	18	23.4	6	7.8
Overhead projector	32	41.6	20	26	25	32.5
Internet facilities	26	33.8	18	23.4	33	42.9
Telephone	47	61	10	13	20	26
Electricity	77	100	0	0	0	0
Generator	8	10.4	3	3.9	66	85.7
Radio	33	42.9	13	16.9	31	40.3
Television	34	44.2	11	14.3	32	41.6
Digital camera	10	13	3	3.9	64	83.1

The results revealed that 68.8% of the principals, deputy principals and HODs stated that they had adequate computers for office use, while 23.4% and 7.8% said they were inadequate and not available respectively. However 32.5% and 42.9% of the respondents said they did not have overhead projectors and internet facilities respectively. All the respondent 100% indicated that they had adequate supply of electricity. However 85.7% indicated that the schools did not have generators as backup in case of power blackouts, while 83% did not have digital camera. Majority of the schools understudy lacked internet services. The study further found that all the schools had adequate supply of electricity. This was a boost to the utilization of ICT facilities in the schools. This contradicts the finding of a study done in Nandi North District which found that electricity supply was inadequate in schools hence affecting the use of ICT (Menjo & Boit, 2005). Kiambu is located near Nairobi hence the adequate supply of electricity.

From this study, it emerged that majority of the schools had adequate computers for office use. But on interviewing the principals it was clear that in most of the schools understudy computers were located in the principal, deputy principal or computer laboratory making access to HODs difficult. All the schools under the study did not have computers in the HODs offices. It is only one County school which indicated that plans were underway to install computers in the HODs offices. This concurs with studies done by (Visscher & Spuck, 1991) which found out that computers were either located in the principals' office or computer laboratory. A poor technical subsystem is a sign of real danger of dragging behind the utilization of ICT in school administration.

4.2.2 How the Schools Acquired the Technology

The researcher further sought to establish how the schools acquired the technology. The results are analyzed as shown in figure 4.1.

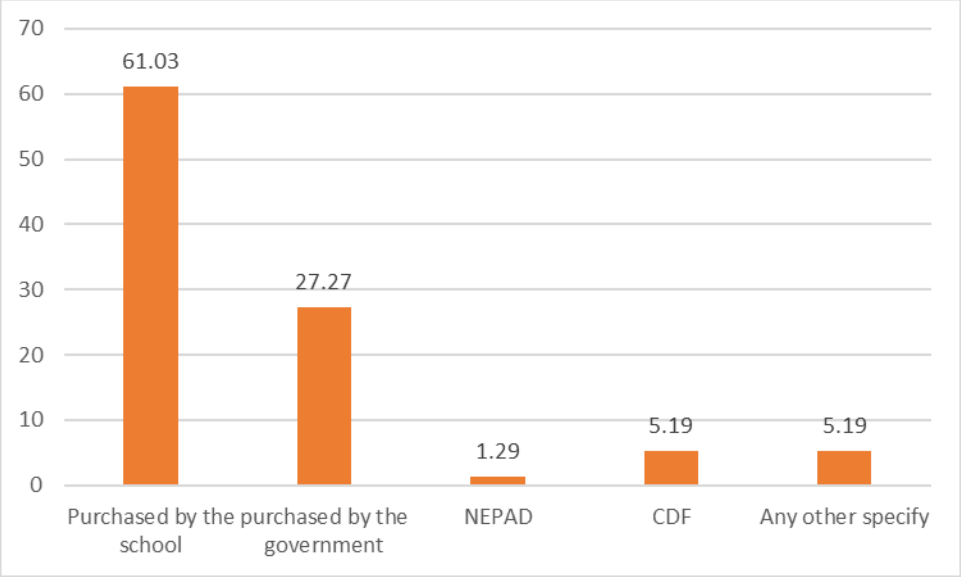

Figure 4.1 How the School Acquired the Technology (%)

The results revealed that 61.03% of the schools purchased their own ICT facilities. 27.27% stated that the facilities were purchased by the government, while 5.19% of the respondent said they acquire the technology through CDF and donors. The findings of the current study indicated that the Government and community offered little support in providing ICT facilities. The findings were in agreement with a study done in USA which indicated that developing countries are unable to afford large computerization programs without increasing educational budgets (Siddiqui, 2007). A study done in Bangladesh indicated that there was lack of political goodwill of people in the corridors of power. Leaders didn't allocate sufficient funds for educational sector and ICT didn't get support from leaders. Greater budgetary allocation was for defense forces rather than education. In Bangladesh they lacked appropriate infrastructure for implementing ICT in education. Internet access was also very poor (Khan, 2012). Info Dev (2010) indicates that providing internet access is very expensive for most government schools in India and South Asia. This is more so in rural areas where internet connection are erratic or completely unavailable. This is in contrast with developed countries in Europe where governments through the Ministry of Education purchase computer hardware and software and provide access to internet (Passey, 2002), (Hennessy & Deaney, 2004). The current study revealed that majority of the ICT facilities were purchased by the school through the initiative of the parents. A small percentage had benefitted from government donation while the contributions of donors and community was minimal. The findings are contrary to a study by Mejo & Boit (2005), which indicated that 60% of the school in Nandi North District were beneficiaries of computer donations from well-wishers.

4.2.3 Type of Operating Systems Used in Computers in Secondary Schools

Information was sought from the principals on the type of operating system they used in the school computers. Figure 4.2 shows the details.

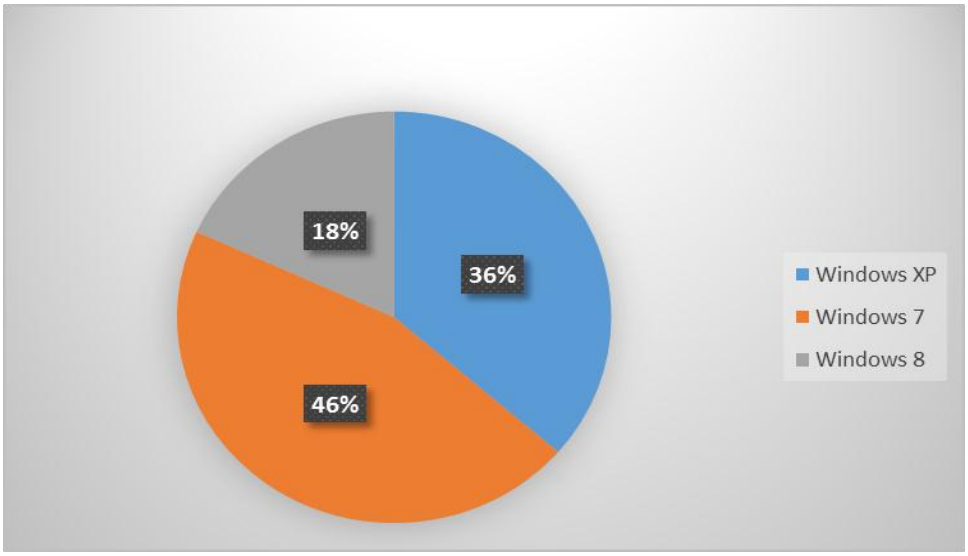

Figure 4.2 Type of operating systems used in computers in schools

The results revealed that 46% of the schools were using Windows 7, while 36% of the schools were using windows XP which is an old operating system. From the study it emerged that most of the schools were using windows 7 while only a few schools were using the latest operating system windows 8.

4.2.4 Accessibility and Reliability of ICT Facilities

The researcher sought to establish from the respondents whether the available ICT facilities were accessible and reliable. The results are shown in table 4.4.

Table 4.4 Accessibility and Reliability of ICT facilities in Secondary schools

Accessibility/Reliability	Frequency (N=77)	%
ICT are accessible to teachers	48	62.3
ICT are not accessible	29	37.7
Total	**77**	**100**
ICT are reliable	50	64.9
ICT are not reliable	27	35.1
Total	**77**	**100**

62.3% and 64.9% of the principals, deputy principals and HODs indicated that the ICT facilities were accessible and reliable respectively. It was clear that in most of the schools understudy computers were located in the principals' office or computer laboratory making accessibility to some of the HODs difficult. All the schools under the study did not have computers in the HODs offices. The findings contrast a study done in Makerere which found out that access to computers by educators and administrators was limited (Ndidde. et. al, 2009). Effective utilization of ICT for administrative purpose required easy access to adequate functioning computers.

4.2.5 Challenges Schools Face in Acquiring and Maintaining ICT Infrastructure

Information was sought from Principals about the challenges they encountered in acquiring and maintaining ICT infrastructure. Table 4.5 shows the details.

Table 4.5 Challenges facing Schools in Acquiring and Maintaining ICT Infrastructure

Item	Frequency (n=12)	%
Lack of finances to purchase ICT facilities	11	91.6
High maintenance cost	6	50
Insecurity/ loss of ICT facilities to thieves	6	50
Lack of qualified personnel	3	25
Fast change of models in the market	2	16.6
Lack of room	2	16.6
Power blackouts	1	8.3

91.6% of the principals cited lack of finances to purchase ICT facilities as the main challenge, 50% stated high cost of maintenance while insecurity which led to loss of computers through theft accounted for 50%. Only 1(8.3%) principal reported power blackouts as a challenge. A large percentage of the respondent indicated that the biggest challenge in acquiring of ICT infrastructure was inadequate finances to purchase the facilities and high costs of maintaining the facilities. Wango (2009), stresses that computers are expensive to buy and maintain. About half of the schools also cited insecurity where they had lost their ICT facilities to thieves. Kiambu is a high risk area with increasing cases of burglary in schools being reported.

4.3 Computer Skills among Principals, Deputy Principals and HODs

The second objective of the study sought information on school administrators' computer literacy level, their expertise in the use of several computer applications and whether they had attended any management or ICT courses. The results are shown in figure 4.3, table 4.5, 4.6 and 4.7

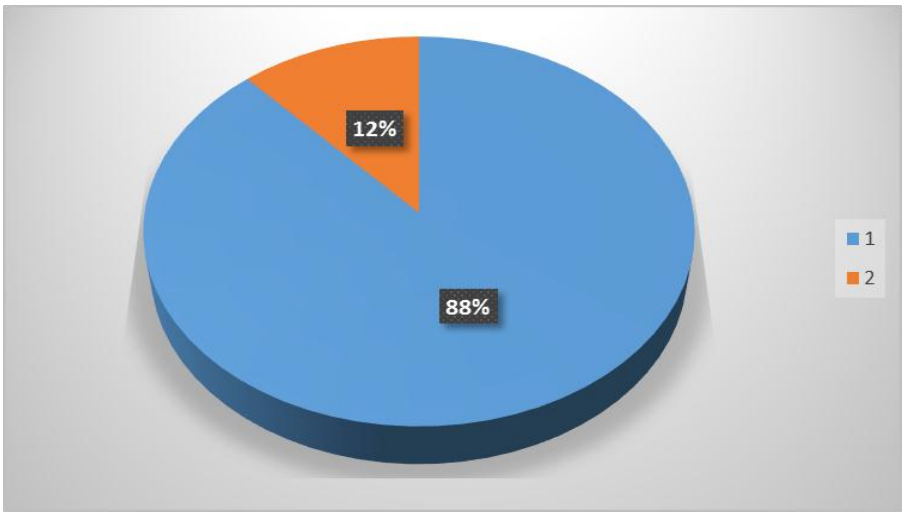

Figure 4.3 Computer Literacy among Secondary School Administrators

Key **1-Computer literate-** 88%

2-Not Computer literate- 12%

On whether the respondents were computer literate 88% indicated that they were computer literate, while 12% said they were not. Of the 12% administrators who were not computer literate 6 indicated that they would learn computer soon while 3 indicated that they will learn later. From this study it emerged that majority of the principals, deputy principals and HODs had acquired some computer knowledge. The findings concurs with a study done in Kilungu, which showed that 83.3% of the principals and teachers were computer literate. However 66.7% of them had acquired computer knowledge from friends (Mumbua, 2009). Lunenburg (2005), states that new technology requires the development of skills to implement. Without proper ICT skills it would be difficult to utilize ICTs in administration of secondary schools.

Table 4.6 Level of Computer Literacy among Principals, deputy principals and HODs

Level of computer literacy	Frequency(N=77)	%
Personal effort/friends	39	50.6
Certificate level	24	31.2
Diploma level	3	3.9
Above diploma	2	2.6
Not literate	9	11.7

The findings on the level of computer literacy indicated that 50.6% of the respondents had learnt computer through personal initiative from friends while 31.2% of the principals, deputy principals and HODs involved in this study had trained in Information Technology (IT) up to the certificate level. Only 6.5% of the respondent had attained a diploma and above in IT. On the level of computer literacy the study revealed that most of the administrators who were computer literate had acquired the skills from friends through their personal initiative. Only a few administrators had a certificate and diploma in computer. From the current study it was clear that most of the administrators had learnt computer through their own initiative. The findings concurs with a study done in Kilungu, which showed that 83.3% of the principals and teachers were computer literate. However 66.7% of them had acquired computer knowledge from friends. The findings are similar to a report by European commission (2013), which indicated that most teachers in Europe have engaged in personal learning about ICT in their own time. Although online resources and networks are widely available in Europe, they are relatively new ways to teachers and only a minority of these opportunities are used by

teachers. This revealed that principals and teachers were not literate enough to use computers (Mumbua, 2009). A study carried out in Britain revealed that only 56% of the teachers had followed at least one ICT training course during the last 5 years. A policy evaluation study of the ICT training suggests that flexible and school based training, follow-up activities and ongoing support are needed to successfully utilize ICT in schools (Tondeur, Braak& Valcke, 2007). Barta, et al (1995) observed that introduction of ICT in traditional schools had run into difficulties because of lack of proper school employee preparation programs which are a pre-requisite for ICT successful assimilation.

Table 4.7 Expertise in Computer Applications

Applications/Response	**Very Good N=77**	**Good N=77**	**Average N=77**	**Weak N=77**	**Poor N=77**
Microsoft word	23.3%	37.7%	23.4%	6.5%	9.1%
Microsoft excel	10.4%	23.4%	37.7%	16.9%	11.7%
Microsoft Access	5.2%	16.9%	36.4%	22.1%	19.5%
Power Point	10.4%	22.1%	36.4%	10.4%	20.8%
Internet	26%	36.4%	23.4%	2.6%	11.7%

The results revealed that majority 61% and 62% of the principals, deputy principals and HODs were above average in Microsoft word and internet applications respectively. Majority were average in Microsoft excel, Microsoft access and Power Point applications. Fewer respondents described themselves as very good in all the applications. The current study revealed that the respondents were average in the applications and this could help in the utilization of ICTs in school administration.

This is in agreement with report of Carnoy (2004), who stated that few school directors and their staff are trained in using basic ICT tools such as word processor and excel.

Table 4.8 Principals, deputy principals and HODs who have undertaken management/ICT Course in the last one year

Item	Frequency (N=77)	%
Administrators who have undertaken management course		
Yes	42	54.5
No	35	45.5
Total	**77**	**100**
Whether ICT was incorporated in the above course		
Yes	15	19.5
No	27	35.0
None Respondent	35	45.5
Total	**77**	**100**

The results regarding Management and ICT courses attended by secondary school administrators under the study showed that 54.5% of the respondent had attended management course in the past one year. 19.5% said ICT was included in the management course, while 35% said ICT course was not included.

This study found out that about half of the administrators under the study had undertaken a management course in the last one year. Of those who had undertaken the course majority indicated that no ICT course was included in the management course. The results are similar to those of a study done in Kahuro District and Nandi North District which found that lack of computer training for school administrators proved to be a major drawback with only 31% of the respondent having undergone

some formal computer training in school or through a workshop. Where it was included the administrators said they had done only introductory courses on computers and not high level ICT courses (Mwangi, 2013; Menjo & Boit, 2005). A study done in Makerere indicated that majority of educators at secondary level had participated in less than 50 hours of professional development which included ICT integration (Ndidde. et. al., 2009). This is in contrast with developed countries in Europe where they have a policy that all citizens should take courses in basic ICT skills or people are access to ICT facilities after office hours. The government finance the training of teachers in ICT (Hennessy and Deaney ,2004). Venezky & Davis (2002), states that for work practices to change significantly in association with ICT, teachers have to be more comfortable with using computers than they are. There is little money available for administrative training in education, as contrast with teacher in-service training. Lack of teachers' knowledge and skills in ICT is one of the main hindrances to the use of ICT in education (European Commission, 2013). The current study revealed that there was no formal ICT training program for teachers at the MoEST or at the school level. Lack of appropriate training among respondents led to the low use of ICT for administrative purposes.

4.4 Principals, Deputy Principals and HODs Awareness of the Advantages of ICT

The third objective of the study sought to find whether secondary school administrators were aware of the benefits of using ICT in administration work. The administrators were asked to state the benefits of using ICT in school administration. The results are shown in Figure 4.4.

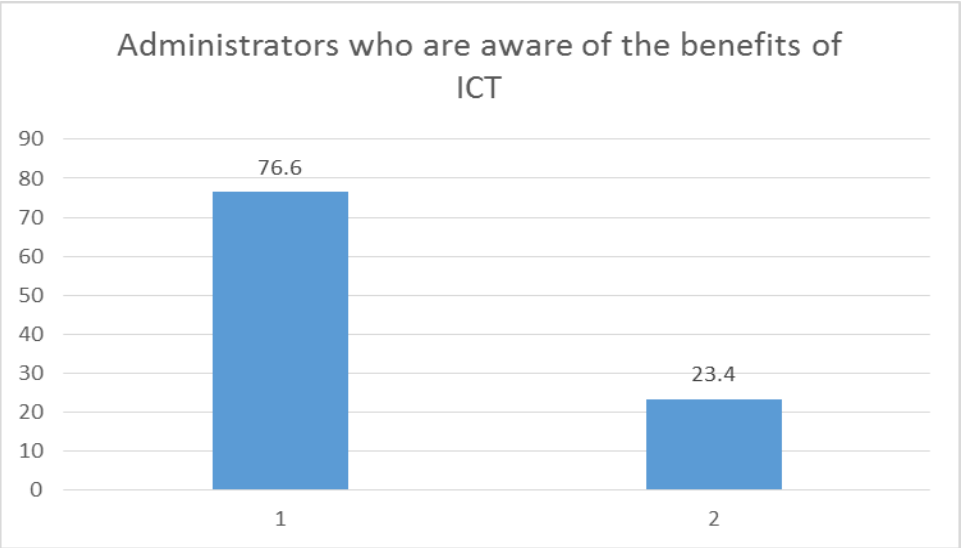

Figure 4.4 Administrators who are Aware of the Benefits of ICT

KEY 1-YES-76.6% 2-NO—23.4%

The results of the current study revealed that 76.6% of the principals, deputy principals and HODs were aware of the benefits of ICT while 23.4% stated that they were not aware. This study found that a large percentage of the respondent were aware of the advantages of using ICT in administration. These results concurs with a research done in Kilungu which showed that all the principals understudy reported that computers were extremely important in their administrative work (Mumbua, 2009). This contrasts Info Dev (2010) that states, there is lack of awareness about ICTs at our disposal and how they can be accessed and utilized economically and effectively by policy makers, administrators and educators.

The principals, deputy principals and HODs were asked the advantages of using ICT. The results are shown in the table 4.9.

Table 4.9 Administrators' (principals, deputy principal and HODs) Response on Advantages of ICT

Response	**Administrators (N=77)**	**%**
ICT are fast and saves time/efficient	55	71.42
Easy storage and access of information	40	51.95
Accurate	13	16.88
Neat and presentable work	12	15.58
Ensures confidentiality	4	0.052
Entertainment	2	0.025

The results indicated that 71.42% of the administrators stated that one of the advantages of ICTs is that it shortened time taken to accomplish tasks while 51% of the respondent indicated that ICT helped in storage and easier access of information. This ensures efficiency in the management of school data. It steps up the speed of handling data which enhances decision making. This is collaborated by studies done by Mumbua (2009) and Menjo & Boit (2005) which indicated that ICT shortens time taken to accomplish tasks and the quality of work was better.

In the current study only a few administrators indicated that computers were more accurate, neat and the work was more presentable. Computers also enhances confidentiality by use of password to store information. None of the administrators under study indicated that use of ICT was cost effective as portrayed by (Wango, 2009; Dahiya, 2004). This could be as a result of the high cost of maintenance of ICT facilities. According to Kaffash. et. al. (2010), ICT can promote international collaboration and networking in education and professional development.

4.5 Principals, Deputy Principal and HODs Attitude towards Utilization of ICT in the Administration of Secondary Schools

The fourth objective of the study sought to find information about administrators' attitude towards utilization of ICT in administration of secondary schools. The researcher used a Likert scale of 1-5 to find out the respondents' attitude. A summary of the respondents' attitude towards ICT is shown in table 4.10

Table 4.10 Administrators (principals, Deputies and HODs) Attitude towards the Utilization of ICT in Administration

Statement/Response	Total scores (N=77)	Mean	%/Positive Attitude	% Undecided	%/Negative Attitude
I like learning how to use computers	355	4.61	97.4	2.6	0
I enjoy using computers	340	4.41	92.2	5.2	2.6
Computers are important administrative tools	357	4.64	96.1	1.3	2.6
I manage information more effectively because of ICT	301	3.90	76.7	6.5	16.9
ICT helps to communicate with stakeholders	293	3.81	74	6.5	19.5
I feel supported in the use of ICT	278	3.60	68.9	6.5	24.7
Computers scares me	98	1.27	1.3	1.3	97.4
Computers are difficult to learn	124	1.61	6.5	2.6	90.9
I find using computers time consuming	122	1.58	7.8	3.9	88.3
ICTs are moving too fast	145	1.88	22.1	9.1	68.9
I fear that, virus may destroy all my data	176	2.29	28.6	7.8	63.7
I fill lost in the ICT age	121	1.57	5.2	3.9	90.9
I can’t cope with ICT jargon	169	2.19	27.3	3.9	68.9

The outcome of the study indicated that the attitude of principals, deputy principals and HODs towards utilization of ICT in administration were generally positive, with an average mean of 3.90 on a scale of 1-5. The respondents strongly agreed that they liked learning how to use computer and they also enjoyed using computers. Majority of the respondent 96.1% strongly agreed that computers were very important administrative tools with a mean of 4.64. Most of the respondent disagreed that computers scare them and are difficult to learn with an average mean of 2.0. However 28% and 27% of the administrators agreed that they feared virus attack on computers and they could not cope with all the ICT jargon respectively.

In this study attitudes were investigated under the values sub-system and the outcome was that most of the school administrators had a positive attitude towards utilization of ICT in school administration. A report by European commission (2013) showed that teachers are confident in using ICT and are positive about ICT impact on Administration. Kavagi (2010) points that the attitude of school administrators towards ICT will determine the speed, spread and depth of Computer use in education. Mburu (2008) state that attitude has been found to be a predictor of the adoption of new technologies such as computers. The negative attitude that accompanies the introduction of new technology had already fizzled out. The school administrators involved in this study had a positive attitude towards ICT.

4.6 Utilization of ICT in the Administration of Public Secondary Schools

On the fifth objective of the study, the researcher sought to find the extent to which administrators in Kiambu Sub-County were utilizing ICT in carrying out their administrative work and also whether schools had a website and an ICT policy.

4.6.1 School ICT policy and Website

Principals were asked to indicate whether they had a schools ICT policy and Website. Figures 4.5 and 4.6 shows the details.

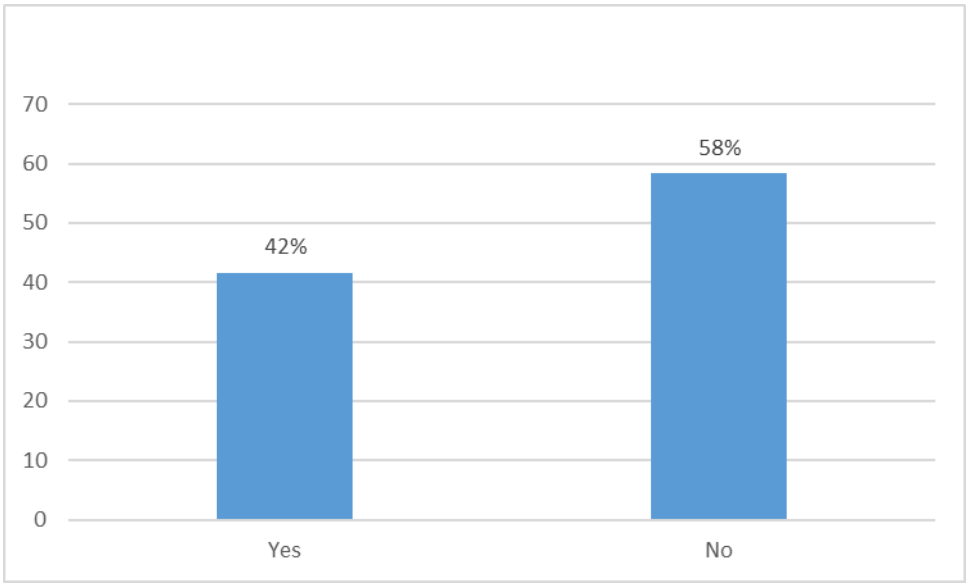

Figure 4.5 Schools that had an ICT policy

On whether the schools had written an ICT policy, 58% of the principals indicated that they had not written a school ICT policy, while 42% stated that they had an ICT school policy. From this study it emerged that a large percentage of the schools in Kiambu did not have an ICT policy. This shows that most of the schools were utilizing ICT without any laid out guidelines. There is need of a mechanism for managing and evaluating ICT implementation in secondary schools. Lack of a written ICT policy at the school level led to ad hoc acquisition of computers by the schools and it stifled the use of Computers at the school level (Kavagi, 2010; Menjo & Boit, 2005). According to Khan, Hassan & Clement (2012), the implementation of ICT in education needs proper plan, policies, execution and monitoring ICT plan,

support, which is absent in most Bangladesh educational institutions. A study in Uganda found that there was no ICT policy at school level.

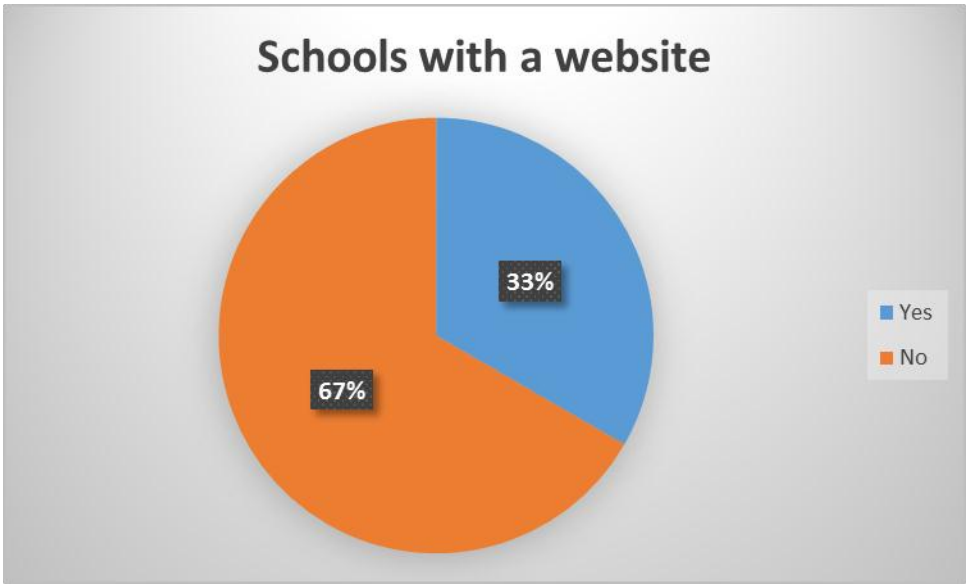

Figure 4.6 Schools that had a Website

On whether schools had a website 67% of the principals said their schools did not have a website while 33% said they had. The current study indicated that majority of the schools did not have a school website. This means communicating with the stakeholders and other people outside the school was not easy. A website is important in a school setting because it has the contact of the school and contains all the information about the school including the history of the school. A school website act as an on-line brochure for prospective parents and students providing them with information to help them decide if the school is right for them. The school website should improve the efficiency and effectiveness of communication between parents, teachers, students, administrators and other stakeholders (Steinbruek, 2007). According to (Carnoy 2004), ICT can change networking within the school to networking between schools.

4.6.2 Administrators (Principals, Deputies and HODs) who were Using Computers in their Administrative Work

Principals, deputy principals and HODs were asked to indicate whether they were using computers to carry out administrative work in their schools. The results are analyzed in figure 4.7

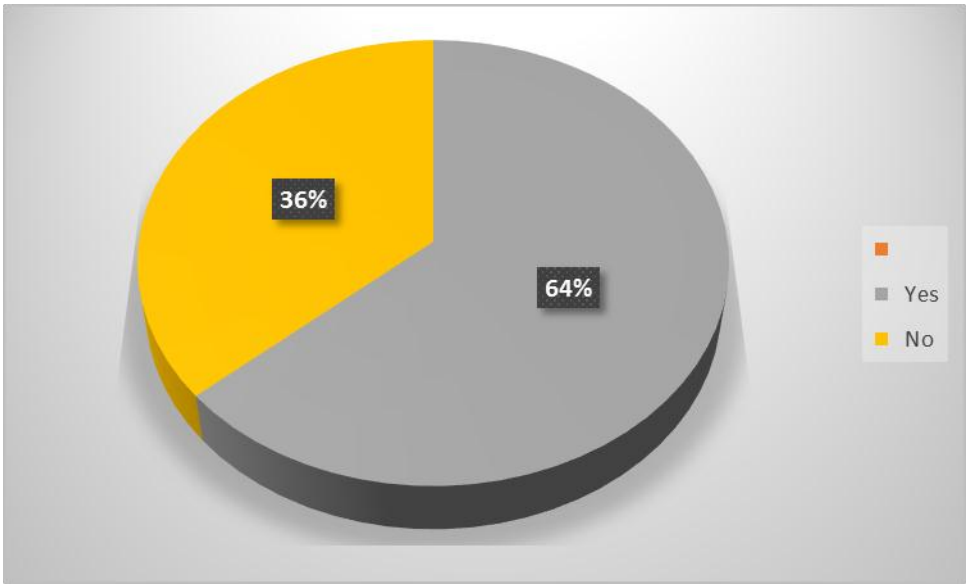

Figure 4.7 Administrators (Principals, Deputies and HODs) who are currently Using Computers to carry out Administrative Tasks

The results revealed that 64% of the administrators were using computers to carry out administrative tasks while 36% indicated that they were not.

4.6.3 Response on the Extent to which ICT was Utilized in Carrying out Administrative Tasks in Public Secondary Schools in Kiambu Sub-County

The researcher using Likert Scale of 1-5 sought to find out the extent to which administrators used ICT to carry out administrative tasks. Table 4.11 indicates various responses.

Table 4.11 Utilization of ICT in Carrying out Administrative Tasks

Task	Total Scores(N=77)	Mean	Response
Supervision of teachers	188	2.44	Rarely
Evaluation of students' progress	276	3.58	Often
Time tabling	276	3.58	Often
Management of teaching resources	215	2.79	Sometimes
Tracking of curriculum implementation	197	2.55	Sometimes
Keeping track of teachers schemes of work and lesson plans	205	2.66	Sometimes
Management of attendance of lessons by teachers and students	177	2.29	Rarely
Delivery of records to relevant offices	213	2.76	Sometimes
Preparation for meetings/Effective presentation	219	2.84	Sometimes
Communication with various stakeholders	223	2.89	Sometimes
Storage of information	285	3.70	Often
Budget preparation	213	2.76	Sometimes
Preparation and submission of financial reports to relevant authority	218	2.83	Sometimes

On supervision of teachers, 30% of the respondents indicated that they never used computers, 27% indicated that they rarely used computers, while 18% indicated that they sometimes used computers in this area. The total scores were 188 giving a mean of 2.44 on a scale of 1-5. This indicated that most of the school administrators never used computers in supervising teachers.

In the schools under study it was found that computers was more utilized in timetabling and evaluation of students with a mean of 3.58 out of a scale of 1-5. 47% of the respondent indicated that they always used computers in making time tables. The results indicated that the administrators often used ICT in timetabling and evaluation of students. 34% indicated that they always used computers in evaluating students. They used computers to process students' examinations, prepare report forms and analyze students' results.

On keeping track of teachers scheme of work, lesson plans and curriculum implementation, the respondents scored a mean of 2.66 and 2.55 respectively. This showed that the administrators sometimes used computers in these areas. Only 6% respondents indicated that they always used computers in tracking curriculum implementation.

On management of attendance of lessons by teachers and student, the respondents scored a mean of 2.29 which showed that administrators rarely used computers in tracking the attendance of lessons. On most of the administrative tasks like communicating with the various stakeholders, preparing budget and meetings the

respondents scored an average mean of 2.7 which indicated that they sometimes used ICT in carrying out administrative tasks.

The study further found out that about half of the administrators used computers to carry out administrative tasks. On trying to establish the extent to which administrators used ICT to carry out administrative tasks the study found that most of the administrators rarely used ICT on supervision of teachers and keeping track of the lesson attendance by teachers and student. A large number of the administrators stated that they often used ICT in timetabling, evaluation of students and storage. This agrees with the findings of a study done by Menjo & Boit (2005), Kanyeki (2006), which found that ICT use was most pronounced for word processing. Administrators used computers at least twice a month to prepare class lists, process examinations, timetabling and accessing student records. Very few teachers use ICT to communicate with parents or other stakeholders (European Commission, 2013). According to Scheuemann & Pedro (2009), schools in Europe have incorporated ICT in management tasks and ICT is increasingly used by teachers for administration and planning. School planning improved with the help of ICT. ICT makes administration accessible to wider groups through a web and school records are easily maintained, exchanged and updated.

The current study found that administrators sometimes (once a term) used ICT to carry out tasks like financial transactions, keeping inventory records, tracking curriculum implementation, communicating with various stakeholders and preparation for meetings. This agrees with the findings of another study done by (Maruti, 2010; Mwaniki, 2007). Carnoy (2004), states that schools hardly use ICT to

manage the quality of output or to raise teacher productivity or to reduce costs. Very few administrators in this study indicated that they always used ICT in carrying out administrative work. Administrators who did not use computers stated that they used manual or paper work to carry out their administrative tasks.

CHAPTER FIVE

SUMMARY OF THE RESEARCH FINDINGS, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter provides a summary, conclusion and recommendations based on the research findings presented in chapter four concerning factors affecting utilization of ICT in administration of public secondary schools in Kiambu Sub-County.

5.1 Summary of the Findings

The study group comprised of administrators in secondary schools such as principals, deputy principals and heads of departments (academic). Female administrators were more than their male counterparts. A large percentage of the administrators were above the age of 40years while very few were below 40 years. Elderly people are reluctant to accommodate new technology. Majority of the respondents had a teaching experience of 10-20 years and administrative experience of less than 10 years. Very few had administrative experience of between 10-20 years. The study found that most of the administrators had a Bachelors' degree and above which was an indication that they were professionally trained and highly qualified. This meant that the administrators could quickly learn to utilize ICT. Most of the District schools had a student enrolment of 300-600. County schools had an enrolment of above 600 students.

The study revealed that ICT facilities in most schools were purchased by the school through the initiative of the parents. A small percentage had benefitted from

government donation while the contributions of donors and community was minimal. Although most of the administrators indicated that they had adequate computers for office use, it was clear that computers were mostly located in the principals' office or computer laboratory making access to teachers difficult. Most of the schools did not have computers in the HODs office.

All the schools had adequate supply of electricity. This was a boost to the utilization of ICT facilities in the schools. A large percentage of the schools didn't have a generator in case of power blackouts. Majority of the schools lacked internet services. Most of the schools were using operating system windows 7, while very few schools had acquired the latest operating system windows 8.

A large percentage of the respondent indicated that the biggest challenge in acquiring of ICT infrastructure was inadequate finances to purchase the facilities and high costs of maintenance. About half of the schools also cited insecurity where they had lost their ICT facilities to thieves. Kiambu is a high risk area with increasing cases of burglary being reported.

From this study it emerged that majority of the school administrators had acquired some computer knowledge. On the level of computer literacy the study revealed that most of the administrators who were computer literate had acquired the skills through their own initiative from friends and books. Only a few had a certificate and diploma in computer. Half of the administrators under the study had undertaken a management course in the last one year. Of those who had undertaken the course majority indicated that no ICT course was included in the management course.

This study found out that a large percentage of the administrators were aware of the advantages of using ICT in administration. Only a few indicated that they were not aware of the benefits of ICT. Most of them gave one of the benefits as being fast and ICT saves time. Administrators indicated that computers were reliable in data analysis as they were more accurate, neat and the work was more presentable. Computers ensured confidentiality by use of password to store information.

Most of the school administrators in this study had a positive attitude towards the utilization of ICT in school administration. A large percentage stated that they like learning and enjoy using computers. They also strongly disagreed that computers scare them and that ICTs are moving too fast for them. Some of the administrators feared that viruses might destroy their data.

A large percentage of the schools in Kiambu did not have an ICT policy. This shows that most of the schools were utilizing ICT without any laid out guidelines. Majority of the schools under the study did not have a school website. This means communicating with the stakeholders and other people outside the school was not easy.

Half of the administrators indicated that they used computers to carry out administrative tasks while the rest stated that they did not. Most of the administrators stated that they rarely used computers on supervision of teachers and keeping track of the lesson attendance by teachers and student. A large number of the administrators stated that they often used computers for timetabling, evaluation of students and storage of information. Some administrators indicated that they

sometimes used ICT to carry out tasks like financial transactions, keeping inventory records, tracking curriculum implementation, communicating with various stakeholders and preparation for meetings. Administrators who did not use computers stated that they used manual or paper work to carry out their administrative tasks.

5.2 Conclusion

A number of conclusions were arrived at with regard to the factors affecting utilization of ICT in the administration of secondary schools in Kiambu Sub-County. The respondents stated that the cost of buying and maintaining computers was very high. At the same time there was scarcity of computer hardware and software for school administrative purpose. Most of the schools under the study did not have computers in the heads of department offices. The computers were located in the principals' office or the computer laboratory. This limited access by HODs and teachers. Effective utilization of ICT requires easy access and adequate functioning computers with reliable internet connectivity

Most of the secondary schools in Kiambu Sub-County had not come up with a school ICT policy in support of ICT use in school management, a shortcoming that led to ad hoc acquisition of computers by the schools because of lack of proper planning. A major finding in the study was the issue of security, where most of the ICT facilities in the schools were stolen.

Furthermore, the study revealed that a high proportion of the school administrators lacked training in essential ICT skills like database applications needed for effective

utilization of ICT in school administration. Majority of administrators had done only introductory courses on computers and not advanced ICT courses. The study revealed that there was no formal ICT training program for teachers at the MoEST or at the school level. Lack of appropriate training among respondents led to the low use of ICT for administrative purposes save only for word-processing. There was need to develop the capacity of school administrators in the area of ICT to ensure its' full utilization in school administration.

On the extent of ICT utilization in the administration of secondary schools, the study revealed that it was mainly used for the facilitation of clerical activities, particularly processing of examinations and report forms for students. The power of ICT in financial management, inventory and presentation was minimal and yet to be tapped to the full in the schools covered in the study. Very few administrators indicated that they always used ICT in carrying out administrative tasks. From the study it was clear that ICT was not fully utilized in administration of public secondary schools in Kiambu Sub-County and this is due to the factors discussed above. However there was a positive attitude towards the use of ICT and a realization by school administrators that ICT enhanced performance in administration work.

5.3 Recommendations of the study

From the issues identified in the study on the factors affecting utilization of ICT in school administration, a number of recommendations were made;

1. The Government through the Ministry of Education Science and Technology should develop an ICT training program for administrators and teachers for

administration needs, to be undertaken by the schools. There is need for continuous in service training of teachers on ICT.

2. The Government through the MoEST should increase the budget for the purchase of computers and administrative software for schools to avoid undue reliance on parents to purchase computers and software. The government should take a leading role in equipping schools with ICT. The government should develop modalities for cost reduction of ICT equipment and services.
3. The government, community and schools should create partnerships that will facilitate greater use of ICT services in Secondary schools.
4. Schools ought to ensure that computers for administrative use are increased in number and are accessible to teachers and administrators.
5. Schools should develop an ICT policy to guide the application of ICT in school management.
6. Schools should take insurance cover for their ICT facilities to cushion themselves in case of theft or vandalism.
7. Schools should construct computer rooms which have burglary proof doors and windows to enhance security.

5.4 Suggestions for Further Research

From the findings of this study, the following suggestions are made for further research:

1. Since this study covered only Kiambu Sub-County which is an urban setting, other studies can be done in a rural setting to investigate factors affecting the utilization of ICT in the administration of secondary schools.

2. A similar research should be carried out in private secondary schools and middle level teachers colleges.
3. Integration of ICT in resource management of public secondary schools.

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APPENDICES

APPENDIX 1: INTERVIEW GUIDE FOR PRINCIPALS

Muriko Grace Lenah,
Department of Educational Management,
Policy and Curriculum Studies,
School of Education,
Kenyatta University,
P.O. Box 43844,
Nairobi.

Dear Principal,

The purpose of this interview is to enable the researcher to find out factors affecting the utilization of Information Communication Technology (ICT) in administration of public secondary schools in Kiambu Sub-County. The information you give will be treated with absolute confidentiality and will not be used for any other purpose other than for this research. Please answer appropriately and honestly. There is no right or wrong answer.

Section A: Demographic Information

1. What is your gender?
   Male ( ) Female ( )

2. What is your age?
   25 – 30 years ( ) 31 – 40 years ( )
   41– 50 years ( ) 51 years and above ( )

3. The number of years you have been a teacher
   Below 10 years ( ) Between 10 – 20 years ( )
   Between 21 – 30 years ( ) 31 years and above ( )

4. The number of years you have been a principal

   Below 10years ( ) Between 10 – 20years ( )

   Between 21 – 30 years ( ) 31 years and above ( )

5. Your highest academic/ professional qualification

   PhD ( ) MA ( ) Med ( )

   B.Ed. ( ) B.A/B.Sc. with PGDE ( ) Diploma ( )

   Any other.....

6. Type of school

   County ( ) District ( )

Section B: Availability and maintenance ICT infrastructure in secondary schools

7. Which of the following does the school have?

Item/ Availability	Available and adequate	Available and inadequate	Not available
Computer For office use			
Internet facilities			
Overhead projector			
Telephone			
Electricity			
Generator			
Radio			
Television			
Digital Camera			

8. How did you acquire the Technology? (if Any)

   Purchased by the school ( ) Purchased by the government ( )

   NEPAD ( ) CDF ( )

   Any other specify .....

9. Do you have support from the BOG/PTA in the area of ICT?

   Yes ( ) No ( )

10. Are ICT facilities reliable?

    Yes ( ) No ( )

11. Is it easy for all staff to get access to the ICT facilities when they need them?

    Yes ( ) No ( )

12. What type of operating system is run in the school computers?

Windows XP	( )	Windows 7	( )
Windows 8	( )	Linux	( )
Mac OS	( )		

13. (a) What challenges do you face in acquiring and maintaining ICT infrastructures for the school administration?

    i)

    ii)

    iii)

Section C: ICT skills among secondary school administrators.

14. (a) Are you computer literate?

    Yes ( ) No ( )

    (b) If yes, indicate the level of computer literacy.

    i) Learnt through my own initiative by reading books and pamphlets ( )
    ii) Knowledge acquired from friends/colleagues ( )
    iii) Certificate earned from a computer college ( )
    iv) Diploma certificate from a computer college ( )
    v) Above Diploma certification in a computer college ( )

    (c) If No, when do you intend to acquire computer training?

    Soon ( ) Later ( ) Never ( )

15. Does the school offer computer as a subject?

Yes ( ) No ( )

16. Does the school have an ICT technician/computer laboratory technician?

Yes ( ) No ( )

17. A. Is there a system for helping teachers identify their ICT training needs?

Yes ( ) No ( )

b. If yes, specify which one.....

18. Please rate your expertise in the use of the following

	Very Good	Good	Average	Weak	Poor
Microsoft Word					
Microsoft Excel					
Microsoft Access					
Power point					
Internet					

19. (a) Have you undertaken any management/administration training in the recent past?

Yes ( ) No ( )

(b) If yes, was ICT course incorporated in the above training?

Yes ( ) No ( )

Section D: Administrators attitude towards the use of ICT

20. How do you rate your attitude towards the use of ICT in the administration of the school. Use the following phrases: 5 – Strongly Agree (SA), 4 - Agree (A), 3 – Undecided (UN), 2 – Disagree (D), 1 – Strongly Disagree (SD).

Statement	Strongly Agree	Agree	Disagree	Undecided	Strongly Disagree
I like learning how to use computers					
I enjoy using computers					
Computers are very important administrative tools					
I manage information more effectively because of ICT					
ICT helps me to communicate effectively with stakeholders in the education sector					
I feel supported in the use of ICT					
Computers scare me					
Computers are difficult to learn					
I find using computers time consuming					
ICTs are moving too fast for me					
I fear that Virus might destroy all my data					
I feel lost in the information age					
I can’t cope with all the ICT jargon					

Section E: Level of awareness of the advantages of ICT and its utilization in the administration of secondary schools.

21. Does the school have a web site?

    Yes ( ) No ( )

22. Has the school written an ICT plan/policy which is an integral part of the school plan?

    Yes ( ) No ( )

23. Is the school ICT Plan/policy guided by the National and MOE ICT policy on the use of ICT in education?

    Yes ( ) No ( )

24. Are you currently using computer in carrying out your administrative work?

    Yes ( ) No ( )

25. If you do not use computers what alternatives do you use to perform administrative tasks? .....

26. To what extent do you use Information Communication Technology (ICT) in performing the following administrative tasks? Use the following phrases: 5-Always (A), 4-Often (O), 3-Sometimes (S), 2-Rarely (R), 1-Never (N).

Administrative task/extent	**Always**	**Often**	**Sometimes**	**Rarely**	**Never**
Supervision of teachers					
Evaluation of progress of teachers and students					
Time tabling					
Management of teaching resources					
Tracking of curriculum implementation					
Keeping track of teachers schemes of work and lesson plans					
Management of attendance of teachers and students various lessons					
Delivery of records to relevant offices					
Preparation for meetings/ Effective presentation					
Communication between the principal and various stakeholders K					
Staff appraisal					
Storage of information					
Budget preparation					
Maintenance of school financial record					
Management of staff payroll					
Preparation and submission of financial report to education auditors					

27. (a) Have the benefits of using ICT been clearly demonstrated to you?

    Yes ( ) No ( )

    b). If yes, please state the benefits of using computers in administrative work in school.

    (i)

    (ii)

    (ii)

28. What possible recommendations would you make towards increasing the use of ICT in enhancing administration in public secondary schools in Kenya .....

    .....

    .....

    .....

APPENDIX 2: DEPUTY PRINCIPALS/HEADS OF DEPARTMENTS (ACADEMIC) QUESTIONNAIRE

Muriko Grace Lenah,

Department of Educational Management, policy and Curriculum Studies,

School of Education,

Kenyatta University,

P.O. Box 43844

Nairobi.

Dear Deputy Principal/Head of Department,

The purpose of this questionnaire is to investigate factors affecting the utilization of Information Communication Technology (ICT) in administration of public secondary schools in Kiambu Sub-County. The information you give will be treated with absolute confidentiality and will not be used for any other purpose other than for this research.

There is no right or wrong answer. You need not to write your name. Kindly fill in the Questionnaire by responding to all the Question items as honestly and correctly as possible.

Section A: Demographic Information

1. Indicate your gender by placing a tick

   Male ( ) Female ( )

2. Indicate your age

   25 – 30 years ( ) 31 – 40 years ( )

   41 – 50 years ( ) 51 years and above ( )

3. Indicate the number of years you have been a teacher

   Below 10years ( ) Between 10 – 20years ( )

   Between 21 – 30 years ( ) 31 years and above ( )

4. Indicate whether you are deputy Principal or Head of department

   Deputy principal ( ) Head of department ( )

   (b) If you are a HOD indicate the department you are in charge of

   Mathematics ( ) Languages ( ) Science ( )

   Humanities ( ) Technical ( )

5. Indicate the number of years you have been Deputy principal/Head of department

   Below 10years ( ) Between 10 – 20years ( )

   Between 21 – 30 years ( ) 31 years an above ( )

6. Your highest academic/ professional qualification

   PhD ( ) MA ( ) Med ( )

   B.Ed. ( ) B.A/B.Sc. with PGDE ( ) Diploma ( )

   Any other.....

7. Type of school

   County ( ) District ( )

Section B: Access and maintenance ICT infrastructure in secondary schools

8. Which of the following does the school have? (tick appropriately)

Item/ Availability	**Available and adequate**	**Available and inadequate**	**Not available**
Computer For office use			
Internet facilities			
Overhead projector			
Telephone			
Electricity			
Generator			
Radio			
Television			
Digital Camera			

9. How did the school acquire the Technology? (if Any)

   Purchased by the school ( )

   Purchased by the government ( )

   NEPAD ( )

   CDF ( )

   Any other specify.....

10. Are ICT facilities reliable?

    Yes ( ) No ( )

11. Is it easy for all staff to get access to the ICT facilities when they need them?

    Yes ( ) No ( )

Section C: ICT skills among secondary school administrators

12. (a) Are you computer literate?

Yes ( ) No ( )

b). If yes, indicate the level of computer literacy

I learnt computer on my own from books and pamphlets ( )

Knowledge acquired from friends/colleagues ( )

Certificate earned from a computer college ( )

Diploma certificate from a computer college ( )

Above Diploma certification in a computer college ( )

c).If No, when do you intend to acquire computer training?

Soon ( ) Later ( ) Never ( )

13. Please rate your expertise in the use of the following

(Tick appropriately)

Applications	Very Good	Good	Average	Weak	Poor
Microsoft Word					
Microsoft Excel					
Microsoft Access					
Power point					
Internet					

14. (a) Have you undertaken any management/administration training in the recent past? Yes ( ) No ( )

(b) If yes, was ICT course included in the above training?

Yes ( ) No ( )

Section D: Administrators attitude towards the use of ICT

15. How do you rate your attitude towards the use of ICT in the administration of the school, Indicate by using the following phrases: 5 – Strongly Agree (SA), 4 - Agree (A), 3 – Undecided (UN), 2 – Disagree (D), 1 – Strongly Disagree (SD). Please indicate by use of a tick (√)

Statement	Strongly Agree	Agree	Disagree	Undecided	Strongly Disagree
I like learning how to use computers					
I enjoy using computers					
Computers are very important administrative tools					
I manage information more effectively because of ICT					
ICT helps me to communicate effectively with stakeholders in the education sector					
I feel supported in the use of ICT					
Computers scare me					
Computers are difficult to learn					
I find using computers time consuming					
ICTs are moving too fast for me					
I fear that Virus might destroy my data					
I feel lost in the information age					
I can’t cope with all the ICT jargon					

Section E: Levels of awareness of the advantages of ICT and its utilization in the administration of secondary schools

Please indicate by use of a tick (√)

16. Are you currently using computer in carrying out your administrative work?

    Yes ( ) No ( )

17. If you do not use computers what alternatives do you use to perform administrative tasks? .....

18. (a) Have the benefits of using ICT in administration been clearly demonstrated to you?

    Yes ( ) No ( )

    b) If yes, please state the benefits of using computers in administrative work in school.

    (i)

    (ii)

    (iii)

19. Indicate to what extent you use Information Communication Technology (ICT) in performing the following administrative task by using the following phrases: 5-Always (A), 4-Often (O), 3-Sometimes (S), 2-Rarely (R), 1-Never (N).Please tick against each task

Administrative task/extent	Always	Often	Sometimes	Rarely	Never
Supervision of teachers					
Evaluation of students' progress					
Time tabling					
Management of teaching resources					
Tracking of curriculum implementation					
Keeping track of teachers schemes of work lesson plans					
Management of attendance of teachers and students various lessons					
Delivery of records to relevant offices					
Preparation for meetings/ Effective presentation					
Communication with various stakeholders in education sector					
Staff appraisal					
Storage of information					
Budget preparation					
Preparation and submission of financial reports to relevant authorities					

20. What possible recommendations would you make towards increasing the use of ICTs in enhancing administration in public secondary schools in Kenya.....

.....

.....

.....

APPENDIX 3: LIST OF PUBLIC SECONDARY SCHOOLS IN KIAMBU SUB-COUNTY INVOLVED IN THE STUDY

CATEGORY OF PUBLIC SECONDARY SCHOOLS

a) COUNTY SCHOOLS

1. KIAMBU HIGH SCHOOL
2. KANUNGA HIGH SCHOOL
3. LORETO – KIAMBU

b) DISTRICT SCHOOLS

1. NDUMBERI GIRLS
2. WANGUNYU GIRLS
3. KIAMBU TOWNSHIP
4. KIHARA SECONDARY
5. GACHIE SECONDARY
6. TING'ANG'A SECONDARY
7. MUONGOIYA SECONDARY
8. RIARA SECONDARY
9. ST. PETERS' NDUMBERI

APPENDIX 4: BUDGET PLAN

S/N	ITEM DESCRIPTION	APPROXIMATE COST (KSH)
1.	Stationery	9000/
2.	Typing and Printing	12000/
3.	Travel Expenses	7000/
4.	Proposal Biding	3000/
5.	Pilot Study	4000/
6.	Project Biding	5000/
7.	Project Copies	10000/
8.	Contingencies	15000/
	TOTAL	65000/

APPENDIX 5: RESEARCH LETTER OF AUTHORIZATION

APPENDIX 6: TIME PLAN

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Proposal Writing											
Proposal Presentation											
Data Collection											
Data Analysis											
Report Writing											
Report Submission											