SOCIO-ECONOMIC FACTORS AFFECTING ICT INTEGRATION IN MANAGEMENT OF SECONDARY SCHOOLS IN KAHURO DISTRICT, KENYA

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DECLARATION AND RECOMMENDATION

Declaration

This research project is my original work and has not been submitted for any award in any other University.

Sign……………………. Date ………………………

Recommendation

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

Sign……………………. Date ………………………

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Above all, my profound gratitude and love are here addressed to God Almighty for making this a reality and for being on my side throughout the course of this study. This project would not have been possible without the contribution of the following: My supervisor, Dr Gitumu for her professional support and competence in providing guidance to achieve my goal. To my friends Mburu and Gatambuki for their valuable contributions and support. My dear family, for their constant moral support.

DEDICATION

I dedicate this work to my loving mother and my late father who were very supportive to me in my formative years of my education.

ABSTRACT

The study was motivated by the rising concerns at which Secondary Schools are embracing ICT. The process of integration is also haphazard and the use of ICT is rudimentary in the few schools that have adopted ICT. This study, therefore, aimed at determining the factors influencing Information Communication Technology (ICT) integration in management of Secondary Schools in Kahuro District. The study was to establish how the financial resources, school infrastructure personnel proficiency and school management affect ICT integration in the management of secondary schools. The study was conducted in selected schools within Kahuro District. A descriptive survey design was employed in this research. The target population of 792 comprised of 36 Principals, 720 teachers and 36 computer technicians. The sample size consisted of 238 respondents who were selected using stratified random sampling. Data was collected using questionnaires. The collected data was analyzed through qualitative and quantitative methods and presented in tables. There should be an effort to improve the level of ICT skills especially through publicizing in schools through in-service programs because they were found to be the most effective methods of publicity for such information. Due to the high significance of the influence of school infrastructure marked by the strong relationship between school infrastructure and ICT integration, the schools and the government should attempt to improve the school infrastructure towards ICT. There was a very low positive relationship between the financial resources and integration. Skilled personnel had a moderate influence in ICT integration as shown by the average correlation disclosed by the study as well as the school management.

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS   Acquired Immune Deficiency Syndrome.

BOG   Board of Governors.

CDF   Constituency Development Fund.

CFSK   Computer for schools in Kenya.

CEMASTEA Centre for Mathematics Science and Technology Education in Africa.

DEO   District Education Officers.

EFA   Education for All.

EMIS   Education Management Information System.

GOK   Government of Kenya.

HIV   Human Immunodeficiency Virus.

HOD   Head of Department

ICT   Information and Communication Technology.

IT   Information Technology.

KESSP   Kenya Education Sector Support Program.

MDGs   Millennium Development Goals.

MOE   Ministry of Education.

NDPCAL   National Development Program in Assisted Learning.

NEPAD   New Partnership for Africa's Development.

NGOS   Non- Governmental Organizations.

NIC   Newly Industrialized Countries.

NICE   Network initiatives for Computer in Education.

OECD   Organization for Economic Co-operation and Development.

PTA   Parent Teacher's Association.

TSC   Teacher's Service Commission.

TTCs   Teachers Training College's

UNESCO   United Nations Educational, Scientific and Culture Organization.

CHAPTER ONE

INTRODUCTION

This chapter presents the background of the study, statement of the problem, objectives of the study, research questions, significance of the study, scope and limitations of the study.

1.1 Background to the Study

Information Communication and Technology (ICT), can be seen to encompass a wide range of technologies including telephone, fax machines, televisions, video, audio recorders, CD players, CD ROMs, personal organizers, programmable and remote operated toys as well as computers. (O'Hara, 2004). In the early years of development ICT was formerly referred to as Information Technology - I.T. and widely revolved around the computer itself. However today computers - form a component of Information Communication and Technology. While the term ICT maybe used in this study, the term computer may frequently be used, without suggesting that the wider context of communication and other related equipment are being omitted or overlooked.

In the I950s and beyond the world computers started showing tremendous success in the development of new hardware, software and applications. Computers found specific applications in business, industry, government institutions and wealthy individuals. Interests in computers and computer software continued to blossom in the I970s. Enthusiasts formed clubs to share their ideas and experiences. In 1971 Intel Co-operation received an order from a Japanese manufacturer of electronics calculators. This was the beginning of the microprocessor chip which heralded the miniaturization of computers making them small, affordable and powerful.

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Three engineers working for Intel Co-operation developed a unique chip that condensed the circuiting of many boards onto a single piece of silicon. This chip was called the microprocessor.

The small inexpensive chips (which could perform the same functions as the central processing unit of a large main frame computer) became the heart and soul of the modern microcomputer. Many automated devices were developed with the microprocessor technology. International communication, banking space travel, and shopping have all taken a new dimension. Thanks to the microprocessor technology.

This exciting technology is descending into our learning institutions, where it has found interesting application in school administration, delivery of classroom instructions and pedagogy; this has opened new frontiers of knowledge. Hicks and Hunka in 1972 had made an early prediction on the use of ICT in the school setting when they stated: "In the next decade, teachers and computers will become educational partners; the students will receive classroom instructions and computer assisted instructions. Today, the partnership between teachers and computers is uncommon. Large numbers of teachers of the future must learn the use and manage the computer as a new educational resource, which best serves the needs of each student. Sanchez and Diaz (2006) made an observation. "In the not so distant future, the term school will refer to an environment in which computers combined with the appropriate educational software and the teacher in the classroom, will work together to provide quality education.''

Our education system: As the education system transmits the knowledge and familiarity there is also a growing need for the educational sector to use the technologies intensively. In education,

ICT technology can be used as a catalyst to initiate changes in the traditional curriculum process and modernize teacher pedagogical perceptions and practices. Makau (1988)). If used effectively the new technologies can offer new ways in which the quality, effectiveness and flexibility of education can be improved.

Today, children are growing up in societies with a widespread use of technological devices. They spend large amounts of their time watching T.V., videos, while some may even have access to computers connected to the Internet. Consequently there seem to be a positive social political factors to ICT amongst school age individuals. This positive social political factors can be harnessed for an educational advantage. According to Mureithi (2007) the Information Communication Technology (ICT) revolution has also embraced the educational system. A massive and rapid computerization process throughout the levels of the educational systems has made ICT an integral part of the educational management sciences in many countries in the world.

The developed countries (G7) i.e. Japan, Germany, Britain, Canada, France, USA and Italy lead in Information Technologies and Integration of ICT into their educational systems. Generally the Western countries including USA and those in Europe have changed high internet host access to more personal computers and telephone ownership. They have a high Internet host access of over 300 people per 1,000 and also a high telephone ownership of over 600 people per 1,000. This has lead to unprecedented explosion of knowledge due to these technological developments hence overall socio-economic growth

In Africa and other developing countries, the impact of ICT is still low due to a host of challenges such as poverty, civil strife, inadequate infrastructure and unclear government policies. Dzinodu (2002) says that this slow pace of embracing ICT could seriously undermine the capacities of these countries to embark on sustainable socio-economic development. With increased craving for ICT in education, New Partners for Africa Development (NEPAD) vision for e-school was born. NEPAD is a strategic framework for African renewal which arose from a mandate given to five initiating African heads of states, the heads of state of Algeria, Egypt, Nigeria, Senegal and South Africa.

Secondary education system is the most strategic education sector and unfortunately the least developed and the least available in Africa. With the vision of changing teaching and learning paradigms in Africa, the e-schools initiative aims to tackle the problems of secondary education in the region through the application of information and communication technologies (ICTs). However, a successful exploitation of the potential of ICTs for enhancement of secondary education depends more on pedagogical and inter-organizational strategies than ICT issues. While secondary education is the domain of interest, e-school projects are premised on collaborative partnerships, alliances and consortia of corporate and government bodies. The projects have many prospects and challenges that must be resolved to ensure its sustainability (Evoh, 2007).

It's argued that a responsive ICT in education policy in each country is key to the success of e-school projects across Africa. At the organizational level, sustained technology intervention is based more on the resolve of the partner members especially the political will of African governments. Luckily enough the - school initiatives stands to gain from the experience of developing countries that have successfully integrated ICTs in education through collaborative strategies.

The New Partnership for Africa's Development NEPAD recently initiated an ambitious project that will see African countries develop primary and Secondary schools in terms of Information Communication and Technology to become e-schools. Such schools will be equiped with the necessary infrastructure, ICT equipment, teachers that are appropriately trained and will have access to appropriate digital content. This will ensure that ICT plays a meaningful role in enhancing education and health conditions among Africa's young people. It is also expected that this crop of the population would also promote the conditions for Africa to be equal and be an active participant in the global economy and also accelerate development for Africa (Wangari, 2008).

This project was mooted by NEPAD head of states and governments as a way of fixing Africa's problems including poverty, illiteracy, hunger and disease. Kenya was among 16 African countries that were identified by the Africa e- commission to host the demonstration project for this initiative. This trial project was officially launched at Isiolo Girls Secondary School by President Mwai Kibaki in 2005 (Ndonga, 2010).

This ambitious project was estimated to cost over 200 billion dollars to finance. Through this initiative all schools in Africa are expected to become e-schools by 2015. Such schools will be equipped with the necessary infrastructure, ICT equipment, teachers that are appropriately trained and will have access to appropriate digital content. The aim of the project was to ensure that ICT plays the meaningful role in enhancing education and health conditions among Africas young people. It was also expected that this crop of population would also promote conditions for Africa to be an equal and active participant in the global economy and also accelerates development for Africa.

Other initiatives carried by individual countries include the Teacher Laptop Initiative (TLI) launched in South Africa (Evoh, 2009) and Mwalimu Laptop. Com. in Kenya this was partnership between TSC, Equity Bank and Safaricom.However, these plans seem to be like a pipedream as we near 2015 when the project is to realize its goal of having all secondary schools in Africa being ICT complaint. This is what provoked this study to try and unravel the challenges facing ICT integration in secondary schools " Improved Secondary education is fundamental to the creation of effective human capital in any socio-economic development .In Africa, the newly formed NEPAD recognizes that as a key issue in the development of human resources in the region. The crisis facing human resources development in Africa is clearly manifested in the secondary education subsector, in form of limited access and poor quality. The main purpose of ICT integration is to enhance efficiency and effectiveness and augment the realization of Kenya's vision of having a global competitive education and training whose goal is to enhance access, quality, relevance and equity (Center for Mathematics ,Science and Technology In Education Africa – CEMASTEA, 2010).

The Government of Kenya (GoK) appreciates and recognizes that an ICT literate labor force is the foundation on which Kenya can acquire the status of a knowledge economy. Thus, the government will therefore make education the avenue for equipping the nation with ICT in order to create a vibrant and sustainable economic growth. The ICT investment in education is expected to take advantage of the on-going initiatives for the implementation of the e-government and the national ICT policy .The key objective of ICT in education is to expand learning opportunities, facilities and channels of curriculum delivery.ICT has received a further boost through the Kenya Education Sector Support Program (KESSP), which is a partnership between the GoK and development partners.

KESSP consists of twenty three different investment programs focusing on the sector as a whole. ICT is one such investment. Kenya Education Sector Support Program fits very well within the broader framework of national policy set out in the ERS and domesticated in the Sessional Paper No. 1 of 2005 on education, training and research. According to Wambui and Barapa (2007) the Ministry of Education it MOE was to roll out an ICT project so as to integrate management programs throughout the country. Under the project ICT was to be integrated into all education and training programs to improve access to information, learning and administration. An ICT unit was created to enhance that, systematic efforts are made towards the strengthening, adoption and use of ICT in the education sector.

The use of ICT in education is in line with development priorities as outlined in the Economic Recovery Strategy for Wealth and Employment Creation and Sessional Paper No 1 of 2005 on policy framework on education, training and research and the millennium development goals.

(MDGS).ICT will therefore, to a great extent help in the attainment of the second national goal of education in Kenya of promoting the social economic technological and industrial needs for national development. This will catapult Kenya to the status of Newly Industrialized Countries (NIC) (industrial takeoff)

Implementation of ICT in education also fits within the broad e-government policy which aims at mainstreaming ICT in all government operations and service delivery. It has a specialized component, Education management Information System (EMIS), which aims at providing education managers and administration with accurate and timely data to enable them make better and informed decisions. Another component is e-learning which aims at using ICT as a tool for teaching and learning. Several initiatives have been started toward ICT integration in education. They include: Kenya ICT Trust Fund, where public and private corporate come together to provide funds to equip schools and colleges with computers as well as internet facilities. The other is NEPAD initiative that seeks to provide infrastructure for the development of ICT in schools. Several NGO'S and private sector players have also joined together with the Government to establish a consortium called Network Initiatives for Computers in Education (NICE) which promotes use of computers in education, it coordinates member activities related to computers equipment sourcing, refurbishment, distribution, installation, training, maintenance, networking, connectivity and use of ICT as a tool within the formal and non-formal sectors. NICE does this through membership mobilization funding and distribution of approved projects for implementation through its members.

It is the concern of this study that these admirable projects have not changed the school scenario for most schools and especially in Kahuro District. A pilot study conducted by the researcher revealed only a third of the school were ICT compliant. Most of the schools were also not fully utilizing their ICT capabilities due to various reasons. This study consequently will try to establish the challenges and constraints affecting ICT integration in Kahuro District so as to come up with recommendations that would fast track the process and ensure secondary school graduates are ICT literate this is regarded as the foundation on which this country can acquire the status of a knowledge based economy as envisioned in vision 2030. Kenya dreams of transforming into a newly industrializing middle income country, providing a high quality life to all its citizens by the year 2030.Similarly the target to have all African schools changing to become e-schools by 2015 as stipulated in the NEPADS heads of state and government meeting held in Johannesburg, South Africa cannot be realized until the constraints and barriers are addressed.

1.2 Statement of the Problem

The Ministry of Education through KESSP 2005-2010 takes cognizance of the emerging global advancements in technology which have sharpened the focus of education towards innovation, initiative, the accessing, processing and applying large amounts of information, exercising appropriate judgment and collaborating with others to make sense of new situations. The stakes are high as the new labor force must meet the demands of the changing world in order to participate in market driven economies as well as understand and take on the social responsibilities to conserve and utilize precious resources, protect the environment, and mitigate public health issues such as HIV/AIDS include (Republic of Kenya, 2005). ICTs have the

potential to play a powerful role in enhancing the tools and environment of learning and preparing students to acquire skills, competencies, and social skills fundamental for competing in the emerging global knowledge economy. Previous studies have captured the impact of ICT initiatives in the education sector and Constraints and barriers to ICT integration in Teachers Training Colleges (TTCs.) A general survey on ICT integration in Secondary Schools has also been conducted. Several initiatives from the government, business corporate and Non – Governmental Organizations have come together to ensure that Kenyan educational Institutions become e- schools.

However, according to Waihenya (2005), on the ground and especially in the rural areas schools still lag behind in terms of ICTs. It is the aim of this study to unravel this inconsistency and give recommendations that will enhance rapid and uniform ICT integration in management of the schools country wide. Consequently ensuring that no region or schools are discriminated .This will also help revamp those schools that are not making progress despite having made efforts in the same.

1.3 Objectives of study

The specific objectives of the study were;

> To establish how financial resources hinder ICT integration in secondary schools in Kahuro District.

> To find out how school infrastructure affect ICT integration in secondary schools in Kahuro District

To find out how personnel proficiency in ICT Skills affect ICT integration in Kahuro District.

To establish the influence of school management on ICT integration in secondary schools in Kahuro District

1.4 Research Questions

The study sought to answer the following questions.

How do financial resources affect ICT integration in secondary schools?

How does infrastructure affect ICT integration in secondary schools?

In which way does personnel proficiency in ICT affect ICT integration in secondary schools?

How does the school management affect ICT integration in secondary schools?

1.5 Significance of the Study

The findings of this study are expected to bring the following benefits. The acceleration of ICT integration in management of secondary school is crucial as it will help mitigate the problem of accessibility, cost (affordability) quality and equity in education ICT integration. This would make learning learner centered away from tradition where its teacher centered making learning more interesting and make teacher's load more manageable.

The prevalent shortage of teacher will be arrested at a cheaper cost, leaving the government with the task of handling other vital issues. Teachers who are overburdened by lots of lessons would benefit as some of the tasks would easily be handled through the use of ICT. Education managers will benefit in that they will make reliable decisions backed by sound statistical data, away from study the norm. The policy makers such as educationist and government planners will also find

the study useful because its finding will hasten the realization of some of the goals captured in vision 2030, (MDGS) Education for all (EFA) and the e-commission for Africa, of making member states ICT Compliant by 2015. The study was intended to benefit other researchers who are interested in ICT integration in education. It's the belief of the researcher that the study would compel stakeholders in education to appreciate the role of ICT integration.

1.6 Scope of the study

This study basically concentrated on factors influencing ICT integration in management of Secondary schools within Kahuro District This research was conducted in Kahuro District of Murang'a County between May 2013 and September 2013 through a descriptive survey research study design. The study was conducted in four Secondary Schools which were selected through stratified sampling out of 36 secondary schools in the District because they had made an attempt to integrate ICT in their curriculum. The data was collected by the researcher using Questionnaires.

1.7 Delimitations to the Study

On the issue of dishonesty on information that was given by the respondents in the questionnaires the researcher verified the information with available information from the secondary sources, for instance use of data available from the D.E.Os office.

1.8 Assumptions of the Study

The study assumed that the respondents gave information required without fear or biasness. The study also assumed that the sample population was an adequate representation of the entire

population. The study assumed that the study was conducted within the stipulated time frame of four months.

1.9 Operational Definition of Terms

Information Communication Technology (ICT) - an electronic means of capturing, processing, storing and disseminating information.

ICT Integration – It is the adoption in running of schools and in teaching and learning.

Challenges – Constraints and barriers to ICT integration in Secondary Schools.

Infrastructure – This refers to items such as electricity supply, building house computers (computer labs.)

E-schools – Use of electronic technology in governing and in learning and teaching in schools.

Financial Cost – Financial cost in education relate to the acquisition of computers, training of personnel, maintenance of equipment and utility costs like electricity and service provider e.g. Internet Service.

1.10 Conceptual Framework

The conceptual framework in figure 2.1 depicts the relationship that exists between the independent variables and the dependent variables. It shows how Economic, political, social cultural and Human Resource factors affect ICT integration in schools. Further the framework shows how the intervening variables including the ICT national policy, parent support, discipline and performance affect the ICT integration.

Independent Variables   **Dependent Variable**

| Financial Resources

Infrastructural resources

Personnel Proficiency

School management | → | ICT integration |

| National ICT Policy
Parents Support
Influence of Attitude
Performance
Discipline |

Intervening Variables
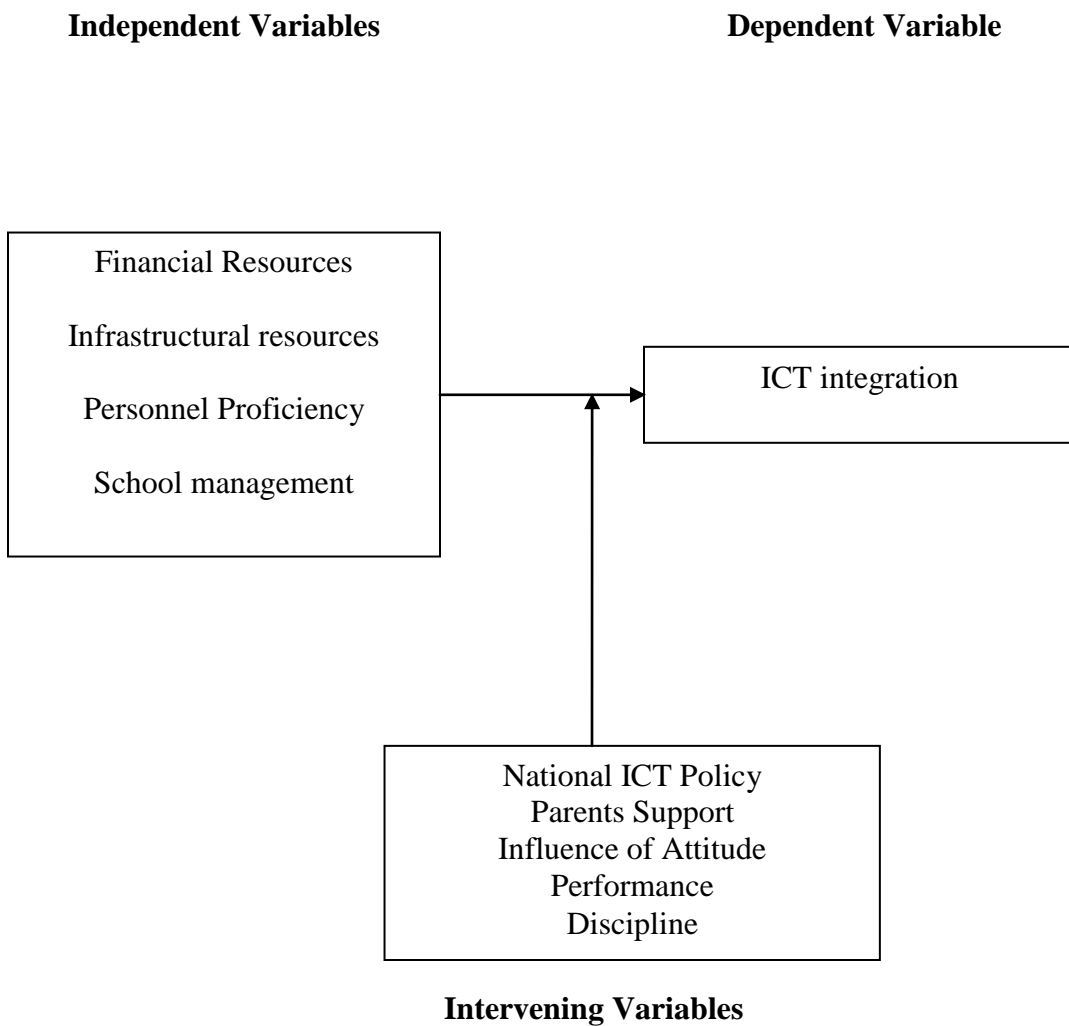
Fig 2.1   Conceptual Framework

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents the overview of existing literature from the past studies on ICT integration, Economic factors, physical factors, human resource and socio-political factors. An empirical review, critical review and conclusion and gaps to be filled are as well presented

.

2.1   Theoretical Framework

This study will be guided by the implementation theory since implementation of ICT is of paramount importance to the study. According to Fernadis (2005), implementation theory is an area of game theory closely related to mechanism design where an attempt is made to add into a game a mechanism such that the equilibrium of the game conforms to some concept of social optimality for instance Pareto optimality. In a game where multiple agents are to report their preferences (or their type), it may be in the best interest of some agents to lie about their preferences. This may improve their payoff, but it may not be seen as a fair outcome to other agents. In order to implement a more "fair" outcome, in a repeated game, the other players may choose to punish any "cheaters".

The conditions of a repeated game where an arbitrary outcome may be enforced are set out in theorems often known as folk theorems. If a game is not repeated, it may only be possible to implement outcomes which are Nash equilibria or satisfy some other equilibrium concept. The question is whether the equilibrium outcomes will be, in some sense, socially optimal.

According to Heines (2005), the problem is formulated in terms of the implementation of social choice rules. A social choice rule specifies, for each possible state of the world, which outcomes would be socially optimal in that state. It can be thought of as embodying the welfare judgments of a social planner. Since the planner does not know the true state of the world, she must rely on the agents' equilibrium actions to indirectly cause the socially optimal outcome to come about. If a mechanism has the property that, in each possible state of the world, the set of equilibrium outcomes equals the set of socially optimal outcomes identified by the social choice rule, then the social choice rule is said to be implemented by this mechanism. By definition, implementation is easier to accomplish the smaller is the set of possible states of the world. For example, if the social planner knows that each agent's true utility function belongs to the class of quasi-linear utility functions, then her task is likely to be simpler than if she had no such prior information.

To be specific, it is important to consider two kinds of decision problems a society may face. The first is the economic problem of producing and allocating private and/or public goods. Here, a state of the world specifies the preferences, endowments, and productive technology of each economic agent (normally, certain a priori restrictions are imposed on the preferences, e.g., non-satiation). For economies with only private goods, traditional economic theory has illuminated the properties of the competitive price system. The Walrasian rule is the social choice rule that assigns to each state of the world the corresponding set of competitive (Walrasian) allocations. A mechanism might involve agents announcing prices and quantities, or perhaps only quantities (the appropriate prices could be calculated by a computer). To solve the implementation problem

we need to verify that the set of equilibrium outcomes of the mechanism coincides with the set of Walrasian allocations in each possible state of the world. In public goods economies, we may instead be interested in implementing the Lindahl rule, i.e., the social choice rule that assigns to each state of the world its corresponding set of Lindahl allocations these are the competitive equilibrium allocations in the fictitious price system where each consumer has a personalized price for each public good.

2.1.2 National Policy on ICT

Kenya has made remarkable progress putting in place an ICT policy framework and implementation strategy, complete with measurable outcomes and time frames. The process has had the benefit of sound advice from officials and stakeholders and, perhaps more importantly, strong leadership from the office of the Permanent Secretary of the Ministry of Education. However, universal implementation is challenging given the lack of resources, national ICT infrastructure, and even electrical supply – particularly in the rural areas. Kenya has an 8-4-4 education system. Primary schooling takes eight years, followed by four years of secondary schooling and four years of first degree studies at university. The country introduced universal, free, non-compulsory access to primary education in 2003 that led to an immediate increase of 1.3 million students. This growth has created an accumulating demand for access to secondary education and, predictably, to tertiary education as well.

After several years of effort, Kenya promulgated a National ICT Policy in January 2006 that aims to "improve the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable and affordable ICT services." The national policy has several sections, including

information technology, broadcasting, telecommunications, and postal services. However, it is the section on information technology that sets out the objectives and strategies pertaining to ICT and education.

The relevant objective in this section states that government will encourage "…the use of ICT in schools, colleges, universities and other educational institutions in the country so as to improve the quality of teaching and learning." The related strategies, under the heading "E-Learning," are to:- Promote the development of e-learning resource and facilitate public-private partnerships, to mobilize resources in order to support e-learning initiatives, promote the development of an integrated e-learning curriculum to support ICT in education, promote distance education and virtual institutions particularly in higher education and training, Promotes the establishment of a national ICT centre of excellence, it also Provides affordable infrastructure to facilitate dissemination of knowledge and skill through e-learning platforms which helps to promote the development of content and address the educational needs of primary, secondary, and tertiary institutions.

It also helps to create awareness of the opportunities offered by ICT as an educational tool to the education sector, sharing of e-learning resources between institutions exploit e-learning opportunities to offer Kenyan education programs for export Integrate e-learning resources with other existing resources.

The Ministry of Education developed a Kenya Education Sector Support Program (KESSP) in 2005 that featured ICT as one of the priority areas with the aim of mainstreaming ICTs into the

teaching and learning process. The National ICT Policy embedded this intent as a national priority and provided the impetus for the ministry to develop its sector policy on ICT in Education. The ministry moved quickly and, in June 2006, introduced the National ICT Strategy for Education and Training. The document, referred to as the ICT policy for the education sector, consists of the following components, each with its own statement of strategic objectives and expected outcomes: ICT in education policy, Digital equipment, Connectivity and network infrastructure, Access and equity, Technical support and maintenance, Harnessing emerging technologies, Digital content, Integration of ICT in education, Training (capacity-building and professional development) and Research and development

The Ministry of Education was given the mandate to lead the monitoring and evaluation of the strategy's implementation, guided by overall government policies on education and ICT, specific education strategic documents for implementing its mandate, and global goals such as Education for All (EFA) and the Millennium Development Goals (MDGs). This mandate is carried out through a ministerial ICT committee that meets monthly and reports quarterly on progress. The committee is chaired by the Permanent Secretary and supported by the ministry's ICT Unit. It has representation from stakeholders involved in implementing the strategy and mobilizing resources such as donors and private sector partners.

Another key part of the implementation strategy is the Kenya ICT Trust Fund, formed in 2004, with the aim of spearheading ICT initiatives in education. Membership is open to public sector organizations such as ministries and other government institutions, private sector companies, donor partners, civil society, as well as academic and other educational institutions. In general,

the objective is to facilitate public-private partnerships (PPPs) that will mobilize and provide ICT resources to Kenyan public schools and community resource and learning centres. Member partners can apply for project funds to implement various ICT components that are outlined in the Kenya ICT Trust Fund's objectives.

The ministry's of education policy framework indicates that there are a number of challenges concerning access to and use of ICT in Kenya, including high levels of poverty, limited rural electrification, and frequent power disruptions. Most secondary schools have some computer equipment; however, this could consist of one computer in the office of the school head. Very few secondary schools have sufficient ICT tools for teachers and students. Even in schools that do have computers, the student-computer ratio is 150:1. Most of the schools with ICT infrastructure have acquired it through initiatives supported by parents, the government, NGOs, or other development agencies and the private sector, including the NEPAD e-schools program. Attempts to set up basic ICT infrastructure in primary schools are almost negligible.

2.2 Information Communication Technology (ICT) Integration

ICT is an electronic means of capturing processing, storing and disseminating information. In education, information and communication technology is seen to encompass the use of a wide range of technologies including computers, the internet, CD ROMS interactive video, television, radios, CD players and telephone. Information technology is the technology that involves storage, processing and dissemination of information by use of computers and communication networks.

Adomi and Kpangban (2010) note that; at the centre of ICT is information. ICT comes into play because of the importance attached to information. Information is an invaluable resource and hence the necessity for a useful and profitable system for its processing storage and retrieval. Kandiri (2007) states that ICT refer to technologies & tools that people use to store, distribute, gather information and to communicate with one another, one on one or in groups through the use of computers and interconnected. They are mediums that utilize both telecommunication and computer technologies to transmit information.

ICT can be grouped into three categories which are information technology which uses computers and have become indispensable in modern societies to process data and save time and effort, telecommunication technologies which include telephone (with fax) and the broadcasting of radio and television often through satellites, networking technologies of which the best known is the internet, but which has extended to mobile phone technology, voice over IP telephony (VOIP), satellite communications and other forms of communication that are still in their infancy.

2.3 ICT integration in Education.

Pelgrum and Law (2003) state that near the end of the 1980s, the term 'computers' was replaced by 'IT' (information technology). Pelgrum and Law (2003) state that computers in education started to become popular in educational policy making in the early 1980s, when relatively cheap micro computers became available for the consumer market. They also note that with regard to the early introduction to micro computers in education in the 1980s there were high expectations that they would make education more effective and motivating.

Hepp, Hinostroza, Laval and Rehbein (2004) state that ICTs have been utilized in education ever since their inception but they have not always been massively present. Although in the beginning computers were not fully integrated in the learning of traditional subject matter, the commonly accepted rhetoric that education systems would need to prepare citizens for lifelong learning in an information society boosted ICTs.

Kandiri (2007) notes that dependable information system is essential for the efficient management and operation of the public and private sectors. But there is a shortage of locally generated information needed for efficient performance of these sectors. In order to meet this objective ICT use in every sector shall have to be accelerated in terms of information generation utilization and application. But this can only be realized if there are procedures put in place to facilitate adoption of relevant ICTs in every sector of the economy. Improved secondary education is essential to the creation of effective human capital in any country (Evoh, 2007). The need for ICT in secondary schools cannot be overemphasized. In this technology driven age everyone requires ICT Competence to survive. Organizations are finding it very necessary to establish or increase their knowledge of computers and other ICT facilities. This calls for early acquisition of ICT Skills by students.

The ability to use computers effectively has become an essential part of everyone's education skills such as book keeping, clerical and administrative work, stock taking and so forth now constitute a set of computerized practices that form the core IT Skills packages; spreadsheets , word processors and databases. (Adomi & Kpangban , 2010)

Today children are growing up in societies with a widespread use of technological devices. They spend large amount of their time watching TV, videos, while some may even have access to computers connected to the internet. Consequently, there seems to be positive social political factors to ICT amongst school age individuals. These positive social political factors can be harnessed for educational advantage.

The earliest documented use of ICT in education is in North America, Europe and the former Soviet Union. The development was a response to unfavorable staff student ratios. There was a rapid increase in the number of student enrolment with a mismatched increase in the number of teaching staff. So any technology that would have teachers handle more students was embraced and adopted. (Mugo, 2007)

One of the earliest ICT programs for schools in European Nations was in West Germany, where the government provided major support for the development of ICTs in schools between 1967 and 1975. Later France started a program called the French National Experiment in educational computing in 1970, which was directed towards automation in secondary education. In the United Kingdom the first ICT school program was proposed in late 1960 by the National Development Program in computer Assisted learning (NDPCAL). In these countries, the ICT programs were funded by the government to provide ICT equipment in Secondary, tertiary, military and Industrial training. (O'hara, 2004)

In North America schools started their computerization programs in the 1970s on a wider scale. By 1987 the America state of California had a student enrolment of 4.2 million against 135,000

computers in schools translating to a ratio of one computer to 31 students. The Canadian province of Ontario had a computer to student ratio of 1:23 by the year 1988.

In Asia and the pacific, UNESCO has documented early efforts on the use of ICT in education. A meeting of the Asian seminar on educational technology centers in Tokyo Japan in June 1984, made a review of the countries experiences in the use of ICT in education. By 1984, Many Asia and Pacific countries had been documented to have established the technologies in schools; some were already in the Pilot phase while others were in the process of establishing national ICT programs in education.

An Important aspect of ICT programs in the developed countries to computerize schools originated from without the education system. Computerization of schools stemmed from technological advances in micro electronics which led to the manufacture of increasingly cheaper, smaller, sophisticated and more powerful computers. The entry of computers into educational systems of developing countries mirror development in the North (Makau, 1988). The developing countries have joined the ICT Programs for schools bandwagon with the aim of making the educational processes more relevant to the overall development of the society. The argument for ICT assisted learning in these countries is that it will provide practical approaches of learning thus providing the learners with the social political factors and skills necessary for self reliance in life after school.

According to the Kezma (2002), there is a strong interest in ICT in sub-Saharan Africa today. This is because of three reasons. Firstly, the benefits of ICT in the provision of, and access to

information services for approved planning and organizational management has become more widely recognized. Secondly the revolution in ICT technology has resulted in hardware and software becoming cheaper. And thirdly the international development Agencies and donor countries have exerted significant pressure upon governments and institutions of learning to adopt extensive use of ICT to improve their organizational capacity and management.

The computerization of Kenyan schools today, follows the pattern observed in the developed North. The first computer project in Kenya was initiated in April 1983 with funding from the Aga Khan Foundation. (Makau, 1988) This project was initiated because a section of the Kenyan Community was keen on the developing role of computers in school. The Aga Khan funded program remained the only ICT program and lacked implementation strategy and was therefore never expanded country wide.

In the year 2003, the TSC publicly declared that computer studies had stalled in most schools. (Wahenya, 2001). Hence several companies combined resources in the promotion of computer education in secondary schools. They formed a project called "Computer for Schools Kenya organization (CFSK). The following companies formed CFSK; Safaricom, The Nation Media Group, Barclays Bank, Security Print, Unilever and country wide suppliers. The project is based at Starehe Boys centre, Nairobi and is supported by the Ministry of Education and international Organizational Development research center, digital link, computer for schools, Canada and the United States Corps (Wambui & Barasa, 2007). In 2004 a project called e –school initiative which was an off shoot of NEPAD strategic framework for economic regeneration for Africa and which was suggested during the 37th Africa Assembly of head of states was launched in Kenya

(Shetty, 2007). The pilot phase was in 6 schools, namely; Mumbi Girls, Isiolo Girls, Menengai High School, Chavakali High School, Wajir High School and Malanda High School.

The introduction of ICT in schools in the 1990s led to a general belief that computer technology would transform the existing educational system, raise the effectiveness and efficiency of the teaching and learning methods, and increase student achievement. Many research studies have been carried out emphasizing on the benefits of using ICT for teaching and learning purposes (Scrimshaw, 2004). Some findings stressed that ICT can motivate pupils, increase their self – confidence and self-esteem, stimulate their interest, increase their attainment, allow greater inter-activity and individualization, enhance stronger relationships between teachers and pupils, amongst others.

2.4 Financial Resources

According to Tinio (2009), one of the greatest challenges in ICT use in education is balancing educational goals with financial realities. ICT in education programs require large capital investments and developing countries need to be prudent in making decisions about what models of ICT use will be introduced and to be conscious of maintain economics of scale. The ultimate question being is ICT-based learning the most effective strategy for achieving the desired educational goals and if so what is the modality and scale of implementation that can be supported given existing financial, human and other resources.

Considering the level of poverty in sub-Saharan Arica, it is ideal to ask whether it is reasonable to invest huge amount o money in ICTs for educational development, instead of using such resources to meet other needs for the education system in the region. Such as to construct classrooms, provide updated textbooks for students, provide electricity and good access roads to

secondary schools in rural and remote communities. ICT integration however should not be viewed as a contradictory or a conflicting interest but as an overall strategy for knowledge and for the improvement of the education system in Africa.

Financial cost of ICT integration in education relates to the acquisition of computers, training of personnel, hiring of personnel, maintenance of equipment and utility costs, electricity and service provider costs e.g. Internet services. Oloo (2009), states that most schools acquire computers either through donation or school fund. Most of the donations are from nongovernmental organizations and enterprise like Computer for Schools Kenya (CFSK) funds and internally generated incomes by the school management for buying computers.

2.5 Infrastructural Resources

According to Evoh (2009) lack of basic infrastructure such as electricity supply and limited connectivity are some of the challenges that ICT integration in education has to contend with. Wambui and Barasa (2007) states that ICT integration is hampered by the limited connectivity using 128KB link which hinders quick access to the internet. Internet connectivity and bandwidth are cited s the challenges hindering the roll out of e-schools.

It is well recognized that connectivity and access to internet is a major challenge in virtually most parts of Africa particularly within educational institutions. This has reduced the level of ICT Integration, functionality and performance of the six demo NEPAD e-schools. It is expected that Information and Communication will accelerate the cyber optic cable network to that reliable internet connectivity with adequate band worth can be used**. (**Wangari, 2008).

It has also been noted that infrastructure and systems provided to NEPAD e-schools were especially donations from the two consortia led by Microsoft and Oracle and are not localized to be responsive to local circumstances. Some parts have become non functional for a considerable period of time largely because the spare or components are not available locally. Setting up of computer laboratories is an expensive fete especially after the introduction of free secondary education, where costs of education are set at a bare minimum. According to Oloo (2002) the lack of ministerial guidelines has led to schools acquiring computers through donations or own purchase that are obsolete in terms of accessing their accompanying software, spare parts and in maintenance and repair. Harmonizing of types of computers and software is vital for easier connectivity and handling.

2.6 Personnel Proficiency

Teachers are the primary agents of educational innovation therefore; ICT skills among secondary school teachers should be seen as an invaluable prerequisite that would help facilitate the teaching and learning procedure in this modern age of information explosion. Baskin and William (2006) state that the lack of teacher knowledge about ICTs, the lack of teacher professional development in ICTs for teaching and the lack of support staff to facilitate sustainable professional development are some of the constraints and barriers to ICT integration. The skill and social political factors of the teacher is a key determinant in the effectiveness of technology integration into the curriculum.

Baskin and William (2006) state that once the teachers assemble ICT skills, they begin to find ways to integrate technology into their curriculum and demonstrate its use to others. Majority of teachers and administrators are ICT illiterate and suffering from technophobia. This is a great impediment to ICT integration in secondary schools. According to Baskin and William (2006) in his study on integration in Australian schools ICT proficiency of the teaching staff represent the greatest challenge to school renewal and ongoing ICT integration.

Teachers Capacity development in ICT competence is a challenge as demonstrated by NEPAD e-schools who use "ICT Champions" to train others and generally lead the way. But as South African Vice - President Ms. Phumzile Mlambo put it during a NEPAD conference in Johannesburg "Many teachers are too scared of technology, let alone use it as a tool for instruction (Wangari,2008). According to Wangari (2008) ICT integration suffers from lack or limited technical support in management of the laboratories and preventive maintenance. In practical terms schools do not have lab technicians. This renders ICT integration a difficult venture, where systems stall for months before they get repaired.

2.7 School Management and ICT Integration

The school leaders' attitudes towards ICT should be of primary concern. Principals" positive attitudes, enthusiasm, and commitment towards ICT integration can play a significant role in overcoming the various impediments that occur during the integration process. According to Pelgrum (1993), "Schools whose principals have positive expectations regarding the educational impact of computers, tend to emphasize computer integrated learning more than schools with principals who are less positive". In addition, Walsh (2002) stresses that ICT integration could be

achieved in schools only if school leaders are totally committed over a period of time. Initially principals who believe in ICT develop strategies to sustain technology in their school and tend to support the efforts of their staff to integrate technology in their teaching by helping them understand "The potential of the technologies available and of how they can become integrated into the day-to-day life of the school" (BECTA, 2007). It is clear that school leaders with positive attitudes towards ICT integration can facilitate to a great extent. Additionally, several other factors have been identified as the "enablers" of ICT integration. For example a leadership role should include "a strong professional vision for meaningful technology integration in teaching and learning" (Mrazek, Hollingsworth & Street, 2005).

Many school leaders have not been prepared for their new role as technology leaders and have therefore struggled to develop both the human and technical resources necessary to achieve ICT outcomes in their schools. Very few principals have themselves used computers in meaningful ways with children and therefore lack the requisite pedagogical vision and experience to guide teachers. A research done by the Faculty of Education, National University of Malaysia shows that 23.9 percent of the teachers support the Smart School Project (Sani, 2000). The results are also in tandem with the research on instructional leadership and ICT literacy where only 24 percent of teachers for primary school perceived their superior are ICT literate and 29.4 percent for secondary school (Mohamad, 2002). Thus school leaders must change the way they think, organize, plan deploy, inspire and reward performance. Without a shift in orientation, administrators are likely to end up being disappointed with the technology project.

Simrit Kaur (2001) added that a major challenge for technology school leaders is to support teachers as they explore and experiment with diverse ways across curriculum. Leaders need to develop teachers' skill in using computers for teaching, solving problems, making decisions and interacting in order to enhance the pedagogical methods. Efforts towards ICT change almost everyone's job in the organization causing employees at all levels to require new skills. Many teachers lacked meaningful opportunities to acquire the skills needed to meet the desired ICT outcomes. Typical in-services courses focus on acquiring computer application skills rather than technology integration strategies and project design skills. Among the issues raised by the educators on the ETeMS (English for Teaching Mathematics and Science) programme were lack of teachers' skill in integrating the use of ICT and student centered methods. A challenge for technology leaders is to provide responsive and flexible professional development appointments that focus on technology integration and design rather than computer application alone. ICT integration in school is inextricably bound up with issues of equity. Until 2003, 5104 school computer labs have been developed in rural areas in order to minimize the digital gap among the students (Azim, 2004).

The role of School management is crucial in ICT integration in any school. School management comprises of the B.O.G, P.T.A and in some instances the school patron. They are mandated to govern the school by the Minister of Education who endorses their appointment (Republic of Kenya, 2001). The roles or functions of the school managers are to facilitate the management of schools. They make decisions on the priorities in terms of school development and assist in resource mobilization. School management consequently can prioritize the integration of ICT or be an impediment especially where the B.O.G members are faced with inadequacies and

technophobia. School management policies could also lead to stagnation of schools and hence slow adoption of ICT, and this can further be compounded by vested interests and corruption.

The school head should be much enlightened to give direction on the need and benefits of ICT integration taking into account the other challenges. Local politics also play a significant role especially in influencing the allocation of Constituency Development Fund (CDF) which allocates money to fund school projects. These can be used to construct computer laboratories, purchase computer hardware or to install electricity. Politically correct schools tend to benefit more at expense of other schools.

2.8 Critical Review

The review of the past studies has revealed that ICT integration in secondary schools is still in its nascent stages and its development is very slow. A task team mandated to develop ICT in Africa took stock of the progress and concluded that much more was needed to make this a reality (Wangari, 2008).

Past studies analyzed released gaps that need to be addressed on the issue of financial cost. Previous studies were ignorant of government plan to make education more affordable and accessible to all. The balance of financial cost and affordability is a new problem for the education managers. This study will endeavor to answer the question of making ICT integration a reality in all schools and not just a preserve of a few endowed schools or the politically correct. Equity in this area needs to be addressed especially for upcoming schools. ICT integration in secondary schools is haphazard; this has not been addressed in past studies. There is no

mechanism in place to ensure all schools are moving in the same direction towards ICT integration. Past studies have dealt on the issue of making school managers ICT proficient. However school managers chart the way forward for the school. Consequently they need to be sensitized on the benefits of using ICT in administration, teaching and learning so that they can cascade the same down to their schools. Therefore this study will try to capture the role of school managers in facilitating ICT integration in Secondary schools. Also according to Oloo (2002), teachers play a dual role of teaching and support in most instances. The importance of having well trained teachers is therefore important. Ironically however, other than the fresh graduates from T.T.C.s majority of the other bulk of teachers is not ICT proficient. This is so because the ministry of education has not required them to do so and only those who do it for their own reasons have. These lacks of adequate number of teachers who are ICT proficient make ICT integration in secondary schools difficult. It is upon this study to determine the reason behind a majority of teachers being ICT illiterate and seek suggestions of correcting this situation, as only ICT proficient teachers can impart and use ICT knowledge in teaching and learning. Challenges related to physical were highlighted in previous studies. However no lasting solutions have been found to address them.

According to Wangari (2008) it is important that the ministry of education liaise with other ministries to ensure that schools benefit in terms of electricity so as to facilitate ICT integration. The government needs also to rethink on the issue of taxation in ICT related commodities so as to make ICT integration a reality. Although several studies have been conducted as reviewed above, none account directly to the challenges of ICT integration in management of secondary schools in Kahuro District. Previous studies have also not addressed the issue of the pace and

haphazardness. This research sought to establish the constraints and barriers leading to the slow pace in ICT integration and also the haphazard integration of ICT in management of secondary schools, So as to narrow the digital divide in schools.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research design, target population, sample size and sampling techniques, data collection instruments and data presentation and analysis techniques.

3.2 Research Design

The research adopted a descriptive survey to gather data. Kombo and Tromp (2006) defines a descriptive survey as a method of research which gathers data at a particular point in time with the intention of describing the nature of existing conditions of or determining specific information. This method is thought to be an effective way of collecting data from a large number of sources relatively cheaply and within a short time.

3.3 Location of the Study

The research was undertaken in Kahuro district, Murang'a County as it was convenient to the researcher and the locality has numerous challenges related to ICT infrastructure.

3.4 Target population

The target population was 710 which consisted of 36 principals from all the secondary schools in Kahuro District, 638 teaching staff and 36 computer technicians. (Kahuro *DEO, 2013)*

Table: 3.1 Target Population

Category	Population Frequency
Principals	36
Teachers	638
Support Staff	36
Total	710

Source: *Kahuro DEO, 2013*

3.5 Sampling Procedures

Stratified sampling technique is a technique that identifies sub groups in the population and their proportions and select from each sub group to form a sample. It aims at a proportionate representative with a view of accounting for the difference in sub-group characteristics (Oso & Onen, 2005). The study therefore, involved sub-dividing the population into three strata consisting of principals, teachers and the computer technicians. Simple random sampling was used to select 30% representation from each stratum since the population is heterogeneous. Stratified random sampling technique was therefore used to ensure that the target population was divided into different homogenous strata and that each sub group was represented in the sample in a proportion equivalent to its size in the accessible population. This ensured that each sub group characteristics was represented in the sample thus raising the external validity of the study.

3.6 Sample Size

According to Gay (1992), 30% of the target population is a good representation for a study, this therefore meant that, the sample comprised of 30% of each of the sub-groups constituting the samples as indicated in Table 3.2.

Table 3.2   Sample Frame

Category	Target Population	Sample Size
Principals	36	11
Teachers	638	191
Computer Technicians	36	11
Total	**710**	**213**

There are a total of 36 schools in the District and 11 were randomly picked. Since 11 principals were involved in the study, this implied that 191 teachers came from the picked schools which was an average of 18 teachers from each school. From 18 teachers in each school, priority was given to all HODs in science subjects and HOD of the computer department. The rest were randomly picked. The 11 computer technicians also came from the selected schools.

3.7 Validity and Reliability of Research Instruments

Mugenda and Mugenda (1999) define validity as the degree to which results obtained from the analysis of the data actually represent the phenomenon under study. To assess validity the researcher consulted his supervisors and authorities in the area of ICT research to determine the validity of the instruments and offer their suggestions on content. The researcher also involved some of his colleagues in the masters' class. Their recommendations were used in the development of the final questionnaires and interview schedules.

Reliability means the degree to which a test consistently measures whatever it is meant to measure (Gay, 1992). Reliability of the instruments in the study was determined during the pre-testing. A test-retest was therefore used on two principals, five teachers and two computer technicians. The researcher compared the responses obtained from each respondent on the first and second test to ascertain their reliability (Orodho, 2004). A correlation coefficient was used to compute the reliability of the instrument.

The questionnaires were pre-tested in two randomly selected schools in the District comprising of two principals, five teachers and two computer laboratory technicians were included in the pre-testing, who were not be included in the study. The pre-testing helped to establish the validity and reliability of the questionnaires. Irrelevant, ambiguous and useless items were identified during the pilot study and necessary corrections were made in readiness to administering the instrument to a larger group.

3.8 Data Collection Procedure

After the validity and reliability of the instruments are done, the researcher proceeded to the field. A permission letter to carry out the study in the area was sought from the Ministry of Education and the District Education Officer (DEO). The letters helped the researcher to access the schools and brief the principals on the purpose of the study. The researcher personally administered the questionnaires.

3.9 Data Analysis

According to Mugenda and Mugenda (1999), data analysis means categorizing, ordering, manipulating and summarizing of data to obtain answers to research questions. The data collected was checked to ascertain that it was complete. It was then organized and summarized by the researcher. Quantitative data was edited before compiling. Coding was done to ensure that each question was answered; the answers were recorded properly and checked to verify whether the instruments were completed in order to compute various statistics. (Orodho, 2005). The researcher findings were subjected to statistical analysis to find out the factors affecting the adoption of ICT in management of secondary schools. The data was interpreted and inferences made and presented descriptively using charts, frequency distribution tables and percentages as well as analyzed by the use of mean, variance, standard deviation and correlation. To ensure reliability, test-retest was used, where the questionnaires were administered to 10 randomly selected subjects. In case of any inconsistencies the questionnaires were revised accordingly.

3.10 Ethical Considerations

Since an interview schedule involving young people and elderly people of different gender, age, Christian denominations and levels of education was used in the research, it was particularly germane to pay careful attention to ethical considerations. According to McNabb (2004), research ethics is a critical part of any research. McNabb (2004) adds that the principle of informed consent is fundamental to any research involving human subjects. Frankfort-Nachmias (1992) posits of the principle of informed consent that Participants should know that their involvement is voluntary at all times, and they should receive a thorough explanation beforehand of the benefits, rights, risks, and dangers involved as a consequence of their participation in the research projects.

In line with the citation above, Cohen et al. (2001,) also give credence to the above postulation by claiming that researchers also need to strike a balance between responsibility for pursuing the truth and protection of the participants' freedoms, rights, privacy and values. Therefore, i was of the opinion that informed consent was critical to the respondents in my study.

The respondents were informed about the research aims and objectives. The respondents were also informed that their identity would not be disclosed to anyone. All respondents were given a legitimate opportunity to say whether they would have liked to participate in the interview or not without any coercion. Furthermore, the respondents were informed that they needed not complete all the questions in the interview.

Other fundamental aspects of ethical considerations like giving assurance to the respondents that the questionnaires would not be made available to anyone else other than the research assistant, the researcher and his supervisors and that the responses would be securely stored by the researcher in case there would be a purpose of verification of results. Moreover, the information was sought without any coercion and the researcher sought a research permit from the Ministry of Education.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

The data collected was entered and analyzed by simple description analysis using Statistical Package for Social Scientists (SPSS) version 19.0 software and Microsoft Excel. The data was then presented through tables and narrative analysis. The presentations were done in line with research objectives.

4.1.1 Response Rate

A total of two hundred and thirty eight questionnaires were distributed to the selected respondents in Kahuro District. A total of 217 questionnaires were duly filled and collected marking a 91.3% response rate. This rate could be attributed to the fact that the questionnaires were physically dropped to the respondents and collected at an agreed date. The distribution is as follows:

Table 4.1 Response Rate

Category	No. of respondents	Percentage
Principals	11	5.069
Teachers	195	89.86
Computer technicians	11	5.069
Total	217	100

4.1.2 Gender of Respondents

The research went further to establish the gender of the respondents in Kahuro District. Table 4.2 shows the findings.

Table 4.2 Gender of Respondents

Gender	Frequency	Percent
Male	121	55.95
Female	96	44.04
Total	217	100

The above results indicate that 55.9% of the respondents were male respondents while 44.04% of the respondents were comprised of female respondents. This indicates that in general, there were more male respondents than female respondents.

Education Level of Respondents

The research also sought to establish the level of education of the represented respondents in Kahuro District.

Table 4.3 Education Level of Respondents

Level of Education	Frequency	Percent
Certificate	35	16
Diploma	71	33
First degree	100	46
Second degree	11	5
Total	217	100

The above results indicate that 16% of respondents have at least a certificate, 33% have a college diploma, 46% with a first degree while 5% have a second degree. This generally shows that majority (51%) of the respondents have university education.

4.1.3   Experience

This research further attempted to find out the period that the represented respondents had worked.

Table 4.4 Experience of Respondents

Experience	Frequency	Percentage
1 - 3 years	5	2.52
4 - 6 years	77	35.29
7 - 9 years	61	28.15
Over 10 years	74	34.04
Total	217	100

The above results indicate the level of experience in ICT by the respondents. The study revealed that 2.52% of the respondents had experience of less than three years, 35.29% had 4-6 years' experience, 28.15% had 7-9 years' experience while 34.04% had over 10 years' experience in the schools. This generally shows that majority 51.2% have over five years' experience of working.

4.1.4   ICT integration

This research attempted to find out the level of ICT Integration by respondents in ICT.

Table 4.5 ICT integration

ICT Integration	Frequency	Percent
Yes	41	19.0
No	176	80.9
Total	217	100

The above results indicate that 80.9% of the respondents in Kahuro District did not use the ICT while only 19% used. This generally means that the level of ICT Integration is generally very low.

4.2   School Management and ICT Integration

The fourth objective was to determine the influence of school management on ICT integration in school management. To do this, the researcher sought to determine how the respondents rated the effect of School Management.

4.2.1 Influence of School Management on Using ICT.

The research then attempted to find out the extent to which the School Management in Kahuro District influences ICT integration.

Table 4.6 Influence of School Management on Using ICT.

Ratings	Frequency	Percentage
Very High	109	56.25
High	72.8	37.5
Moderate	12.2	6.25
Low	0	0
Very Low	0	0
Total	194	100

The above results indicate that 56.25% of those respondents who have very positive school management towards ICT use while out of those who have positive school management, 37.5% use and 6.25% of those who have neutral School Management on ICT use. None of those with negative and very negative school management use the services. Generally, majority of those with very positive School Management use the services.

This study further attempted to find out the relationship between School Management and ICT Integration.

Table 4.7 Relationship between School Management and ICT Integration.

School Management (**X**)	**%**	**ICT Integration (Y)**
Very High	15.4	56.25
High	44.0	37.5
Moderate	30.9	6.25
Low	7.32	0
Very Low	2.38	0
Total	100	100

Mean (X) = 20.0   Mean (Y) = 20.00

Variance (X) = 237.4   Variance (Y) = 521.8

Standard Deviation (X) = 15.4   Standard Deviation (Y) = 22.84

Correlation (r) = 0.403

The analysis above shows that there is a weak positive relationship between School Management and ICT Integration. This means that respondents consider School Management to have a weak effect on ICT integration in secondary schools in Kahuro District. These findings concur with Pelgrum (1993), that schools, whose principals have positive expectations regarding the educational impact of computers, tend to emphasize computer integrated learning more than schools with principals who are less positive.

4.2.2 School Management and Support of ICT Programs

The respondents were asked if their school administrators and managers supported ICT programs. This was aimed at establishing the influence that school management have on ICT integration and the result are summarized in Table 4.8.

Table 4.8 School Management and Support of ICT Programs

	Frequency	Percentage
Strongly Agree	59	27.3%
Agree	36	16.8%
Do Not know	5	2.1%
Disagree	80	37%
Strongly Disagree	37	16.8%
	217	100

The above results indicate that, majority of the respondents (53.8%) indicated that school management was not supportive of ICT programs. The study therefore concludes that school managers are not supportive of ICT programs. These findings concur with Simrit (2001) that a major challenge for technology school leaders is to support teachers as they explore and experiment with diverse ways to integrate technology in meaningful, challenging and authentic ways across curriculum. Leaders need to develop teachers' skill in using computers for teaching, solving problems, making decisions and interacting in order to enhance pedagogical methods.

4.3 Financial Resources and ICT Integration in Secondary Schools

The first research objective was to determine how financial resources in a school determine ICT integration in secondary schools. The study started by establishing the respondents rating of ICT and the results are summarized in Table 4.9.

Table 4.9   Ratings of Importance of ICT

Attractiveness	Frequency	Percentage
Very high	34	15.47
High	62	28.57
Moderate	111	51.19
Low	10	4.76
Very low	0	0
Total	217	100

The above results indicate that the study revealed that 15.47% of the respondents felt that the importance of ICT very high, 28.57% found them high, 51.19% moderate, 4.76% felt it was low while none felt it was very low. The study thus notes that over 95% of the respondents indicated they found ICT as an important tool in education management. The findings noted above concur with Haydn and Barton (2006) study that noted that teachers' attitude to the use of ICT had changed over the past decade.

4.3.1 Influence of Financial Resources on ICT integration.

This research attempted to find out the influence of financial resources on ICT integration. The study aimed at first establishing the relationship between financial resources and ICT integration in management in schools. The study compared the responses on the importance of ICT integration and respondents view on the importance of ICT. A correlation analysis was computed to explain the relationship between the financial resources and perception of importance of ICT integration in management.

4.3.2 Relationship between Financial Resources and ICT integration

This research further attempted to find out the relationship between financial resources and their influence on ICT integration.

4.10 Analysis of Mean Variance and Standard Deviation

Item	Importance (X)	Integration(Y)
Mean	19.99	19.99
Variance	339.8	193.27
Standard Deviation Correlation (r) = 0.297	18.43	13.9

The above results indicate that there is a very weak positive correlation r = 0.297 between financial resources and ICT Integration. This means that respondents felt that financial conditions had little impact on integration of ICT. The study thus concludes that there is a very weak link between financial resources and teachers perception of integration of ICT in school management. The findings are divergent to Mokaya (2012) study that established that there was a very strong correlation between financial resources and peoples view on the importance of integration of ICT in management.

4.4 Personnel Proficiency and ICT Integration

The third objective was to find out hoe personnel proficiency in ICT affected integration in management. To do this, the study sought to find out the level of skilled human resources in Kahuro District. Table 4.11 shows the findings.

Table 4.11 Number of Skilled Human Resources

Level of Skills	Frequency	Percentage
Very high	34	15.47
High	57	26.19
Moderate	103	47.63
Low	18	8.33
Very low	5	2.38
Total	217	100

The above results indicate that the study revealed that 15.47% felt that the level of skills in ICT integration as excellent, 26.19% as good, 47.63% as average, 8.33% as poor and 2.38% as very poor. This means that generally majority 87.99% of the respondents felt they were competent in ICT integration. From these findings, the study concludes that the level of ICT skilled personnel among secondary school teachers is high. These findings do not concur with Baskin and William (2006) that majority of teachers and administrators are ICT illiterate and suffering from technophobia.

4.4.1 Influence of Personnel Proficiency in ICT skills on ICT integration.

The research attempted to find out how Personnel Proficiency in ICT skills influences respondents in Using ICT.

Table 4.12 Influence of Personnel Proficiency in ICT skills on ICT integration.

Personnel Proficiency in ICT skills	Frequency	Percentage
Very high	119	50.0
High	63	31.25
Moderate	44	18.75
Low	0	0
Very low	0	0

The above results indicate that 50.0% of the respondents felt that their personnel proficiency in ICT skills were excellent, 31.25% were good, 18.75% felt they were average. None of the respondents had poor or very poor ICT skills.

4.4.2 Relationship between Personnel Proficiency in ICT skills and ICT integration.

The research further attempted to establish the relationship between the personnel proficiency in ICT skills and their ICT Integration.

Table 4.13 Personnel Proficiency in ICT skills and ICT Integration

Awareness (X)	%	ICT Integration (Y)
Very high	15.47	50.0
High	26.19	31.25
Moderate	46.42	18.75
Low	8.33	0
Very low	2.38	0
Total	**100**	**100**

Mean (X) = 19.58   Mean (Y) = 20.0

Variance (X) = 240.64   Variance (Y) = 365.625

Standard Deviation (X) = 15.51   Standard Deviation (Y) = 19.12

Correlation (r) = 0.328

The above results indicate that there is a low positive relationship between Personnel Proficiency in ICT skills and ICT integration. This means that human resources who have skills in ICT are more likely to influence ICT integration than those without ICT skills.

4.5   School Infrastructural Resources and Integration of ICT

The second objective of the study was to find out how school infrastructure affected ICT integration in management. This research attempted to find out how respondents rated infrastructural resources in relation to ICT. To do this the researcher asked of the respondents' awareness of the fact that infrastructural resources have an effect on integration of ICT. Table 4.14 shows the ratings of levels of awareness.

Table 4.14 Awareness of Infrastructural Resources Influence on ICT integration

Ratings	Frequency	Percentage
Very high	5	2.28
High	10	4.76
Moderate	44	20.2
Low	62	28.5
Very low	96	44.0
Total	217	100

The above results indicate that the study revealed that majority (72.5%) of the respondents are not aware of the effect of infrastructural resources on ICT. 2.28% said that they are very aware, 4.76% are aware, 20.2% are slightly aware, 28.5% are unaware while 44.0% are completely unaware of the services. The study concludes that majority of the respondents were not aware that infrastructural resources have an effect on ICT integration. This research attempted to find out the influence of Promotion of ICT towards their ICT Integration of respondents in these services.

4.5.1 Effects of Infrastructural Resources on ICT integration

Table 4.15 Effects of Infrastructural Resources

Ratings	ICT Integration	Percentage
Very high	95	43.75
High	68	31.25
Moderate	54	25.0
Low	0	0
Very low	0	0
Total	217	100

The above results indicate that the study revealed that out of the respondents who were very aware 43.75% used, 31.25% of those who were aware while 25% of those slightly aware. None of those who were unaware and very unaware used these services. The study concludes that generally majority of those who applied ICT were very aware of the existing ICT infrastructure. The findings concur with Carlon and Gadio (2002) that in the absence of knowledge on existing ICT infrastructure, integration of ICT in management is a challenge.

4.5.2 Relationship between Infrastructural Resources and ICT integration.

The respondents were asked to indicate the relationship between infrastructural resources and ICT integration in schools management. The mean, variance and standard deviation as well as correlation analysis is summarized in Table 4.16.

Table 4.16 Analysis of Mean Variance and Standard deviation for Infrastructural Resources and the ICT Integration

Item	Importance (X)	Integration(Y)
Mean	19.84	20.00
Variance	238.9	238.91
Standard Deviation Correlation (r) = 0.92	15.45	15.4

The above results indicate that there is a very strong positive correlation between the level of infrastructural resources and the ICT integration. This means that as the level of ICT infrastructure increases, the more one is likely to integrate ICT in management. The findings also concur with Harre (2007) that ICT integration in management is closely linked to the people's awareness of existing ICT framework and infrastructure. Harre (2007) noted that people tend to integrate what they already know exists and thus would use this prior knowledge to buy the necessary components of ICT required by their operations. This finding concurs with Baskin and William (2006) that once teachers assemble ICT skills, they begin to find ways to integrate technology into their curriculum and demonstrate its use to others.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings, discussion, conclusions and recommendations emanating from the results of this study. The study aimed at coming up with specific data on factors influencing ICT integration in management of schools in Kahuro District. The study sought to evaluate the effects of socio-economic factors, factors influencing ICT integration in management of secondary schools in Kahuro District.

5.2 Discussions of the Results.

The summary of the findings are discussed in relation to the objectives of the study and include the financial costs, school infrastructure, personnel proficiency and school administration, and how the objectives affect ICT integration in the management of secondary schools.

5.2.1 ICT integration

The results of this study reveal that ICT Integration in Kahuro District was only 19.0%. This level of ICT Integration was very low. Yet from the study results, 28.57% found them high, 51.19% moderate, 4.76 felt it was low while none felt it was very low. For most services offered in the contemporary society, ICT Integration is a key for its success. This study set out to investigate the factors influencing ICT integration in the management of secondary schools in Kahuro District.

5.2.2 Financial resources and ICT

The results of the study reveal that majority of the respondents 43.7% rated the influence of financial resources on the ICT as very high, 25% high, 18.7% , moderate, 6.25% rated the influence of financial resources as low, while another 6.25% rated it as very low. On further enquiry, the results of the study showed that there is a very weak positive correlation r = 0.297 between financial resources and ICT Integration. This means that respondents felt that financial conditions had little effect on integration of ICT. Hence improved financial conditions would not necessarily enable faster integration of ICT.

5.2.3 Infrastructural resources and ICT integration.

Another objective of this study was to find out the extent of the influence of infrastructural resources on ICT Integration. The results of this study revealed that majority 72.5% of the respondents in Kahuro District were not aware about ICT integration in secondary schools. This shows that these services were not well publicized. 73.36% of the respondents were consequently influenced by this lack of infrastructural resources resulting to a very high positive correlation of (r = 0.92) between the infrastructural resources and ICT integration.

Since the research revealed a high correlation between infrastructural resources and ICT integration, the research concurred with the findings that infrastructural resources strongly influence ICT integration.

In general, the results of this study revealed that among the four factors, school infrastructural resources was the key component in ICT Integration.

5.2.4 Skilled personnel and ICT integration Skills.

Objective three of this study was to assess the level of ICT skills and ICT integration. The results of this study revealed that majority 87.9% of the respondents in Kahuro District are competent in ICT integration. Only 10.71% rated their ICT integration skills as average and below average.

The findings depicted a low positive correlation (r = 0.328) between skilled personnel in ICT and ICT integration. This can be interpreted that the level of skills in ICT integration does not greatly influence the ICT Integration. Therefore the poor ICT integration cannot to a great degree be attributed to respondents' level of skills in ICT integration but rather to other factors that may have a greater influence on the ICT Integration.

5.2.5 School Management and ICT integration.

The fourth objective of this study was to investigate the extent of the influence of school management towards ICT on the ICT Integration. The results of this study reveals that majority of the respondents (90.46%) have a positive response on school management towards ICT integration. Therefore the level of ICT integration can to a very high degree be attributed to the nature of respondents' school management. Therefore if the ICT Integration level of ICT has to be improved, the secondary schools must work on improving the efficiency of the school management.

5.3 Conclusion.

Based on the results of this study, ICT Integration by respondents in ICT was low in Kahuro District. School infrastructural was the key component in ICT Integration followed by the influence of school management

There was a very low positive relationship between the financial resources and ICT integration. Hence the financial resources offered are not a major factor for low ICT integration. Skilled personnel had a low influence in ICT integration as shown by the low correlation disclosed by the study.

5.4 Recommendations

On the basis of this study, the following recommendations were made;

    i. Due to the high significance of the influence of school infrastructural resources marked by the strong relationship between school infrastructural resources and ICT Integration, secondary schools should improve and advance ICT infrastructures so as to enhance the capacity of ICT integration in the management of secondary schools.

    ii. There should be an effort to improve the level of ICT skills especially through publicizing in schools and through in-service programs to all cadres of school management teams so as to improve on their efficacy towards ICT integration.

5.5 Suggestions for further research.

Due to some limitations, this research was not able to cover some areas. It therefore recommends the following areas for further research:

    i.   Effects of ICT Integration in class administration and management.

    ii.   Challenges facing adoption of e-Learning in secondary schools.

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REFERENCES

Adomi, B. & Kpangban, E. (2010). *Application of ICTS in Nigeria Secondary Schools*. Available http://www.the free library.com/application. Accessed on 19th June 2010.

Arroyo, G., Sanchez, F & Diaz (2006). *Pedagogical innovation and ICT*. Montegro: Caceres Publishers,

Dzinodu, C. (2002). *A Blue prints for Developing National ICT Policy in Africa*. Nairobi: African Technology Policy Studies Network (ATPSN).

Evoh, C. (2009). *Emerging Trajectories and sustainability of ICTs in Educational Reforms in Africa*: Exploring the prospects of the teacher laptop policy in South Africa, Network, Journal of Education for international Development. (JEID)

Gay, L. (1992). *Educational Research: Competencies for Analysis and Application*. Paris: Merrill publishers.

Hepp, Hinostroza, Laval & Rehbein (2004). *Technology in schools: Education ICT and the knowledge society*. Available From:http://www.world

Bank.org./educations/pdf/ICT report. Accessed on 24/7/2010.

Kailikia, T.K. (2005). *The constraints facing implementation of ICT in secondary schools in Meru North Districts*. Unpublished. Med. Thesis, Kenyatta University.

Kandiri, J.M. (2007). *ICT Policy in Kenya and ways of improving the existing ICT Policy*. Available:www.ftgathmore.edu/research/ICT Policy in Kenya/PDF.

Karuru, I.W. (2005). *An Investigation into the status of Kenyan's Information and communication Technology Policy in the Educational Systems*. Unpublished Med Thesis Kenyatta University.

Kombo, D.K. & Tromp, D.L. (2006). *Proposal and Thesis Writing.* Nairobi,

Pauline.uwi.edu/pdf.

Kozma, R. (2002). *ICT and Educational Reform in Developed and developing countries.* OECD.

Available:http://www.literacyonline.org/pdf. Accessed June 10.2010.

Makau, B.M. (1988). *Computer in Kenya's Schools: A case study of an innovation in Kenya.*

Canada, IDRC.

Mugenda, O. & Mugenda, A. (2005). *Research Methods: Qualitative and Quantitative*

Approaches. Nairobi: Africa Center of Technology Studies. (ACTS)

Mugo, D.G. (2007). *Challenges and successes facing the use of ICT technologies in the teaching*

of Science. Unpublished. M.ed Proposal. Kenyatta University.

Mureithi, C.M. (2007). *Constraints affecting the implementation of ICT course in the primary*

Teachers Training Program unpublished Med. Thesis Kenyatta University

Ndonga, S. (2010). *Kenya to blend ICT with Education*

Available:http://www.capitalfm.co.ke/news/newsprint Accessed 09/09/2010.

Ohara, M. (2004). *ICT in the early years.* London: Anthony Rowe.Ltd

Oloo, L.M. (2002). *Baseline survey Report for ICT in Secondary schools in selected parts of*

Kenya. Available: http://www.nationalmedia.com/eastafri.

Orodho, A.J. (2004). *Techniques of writing Research Proposal and Reports.* Nairobi: Masola

publishers.

Orodho, A.J. (2005). *Elements of Educational and social sciences Research Methods* Nairobi:

Masola Publishers.

Oso, W.Y. & Onen,D. (2005). *A General Guide to writing Research Proposal and Report: A*

handbook for Beginning Researchers. Kisumu: Option press.

Pelgrum, W. & Law, N. (2003). *ICT in Education around the world: Trends problem and prospects*. UNESCO International Institute for Educational planning. Available from http://www.worldcatlibraries.org/wiper.Accessed on 23rd August 2010. Publications Africa.

Shetty, M. (2007). Nepad *e-learning project faces major obstacles.* Available: http://www.nationalmedia.com/eastafri.

Tinio, V.L. (2009). *ICT in Education:* Available: http://www.eprimeas .org.Accessed on June 10 2010.

Waiharo, P.K. (2007). *Sustainability of ICT in Kenyan Secondary Schools*. Unpublished M.ed Project. Kenyatta University.

Waihenya, K. (2001). *Computer Studies under Sec*urity. Nairobi: National media Group Ltd

Wambui, M. & Barasa, E. (2007*). ICT: Dawn of a new era*.Nairobi:Elimu News, Ministry of Education. Internet URL.www.education.go.ke

Wangari, V. (2008). *Kenya schools to become e-schools.* Nairobi: Elimu News, Ministry of Education. Internet URL.www.education.go.ke

Questionnaire for Principals

Dear Sir/Madam,

RE: *The factors affecting ICT integration in management of secondary schools in kahuro*

district, Kenya

I hereby wish to inform you that I am conducting the above mentioned Research in your

District. Your school has been identified for the program that will determine the factors

affecting ICT integration in management of secondary schools.

We have attached this questionnaire for the said purpose and the information gathered will be

accorded **STRICT CONFIDENTIALITY**. Please respond factually.

SECTION A

Personal Data

(Tick Appropriately)

1. State your gender?

       a) Male

       b) Female

2. What is your marital status?

       a) Single

       b) Married

       c) Divorced

3. What age bracket are you within?

        a) Below 25 years ☐

        b) 26-35 years ☐

        c) 36-45 years ☐

        e) Above 46 years ☐

4. What is your level of education?

        a) K.C.S.E ☐

        b) Tertiary ☐

        c) University ☐

        d) Post Graduate ☐

5. How many years have you been in the Institution?

        a)   Below 5 years ☐

        b)   6-10 years ☐

        a)   11-20 years ☐

SECTION B

6. Has your school adopted ICT in its system?

        a)   Yes ☐

        b)   No ☐

7) Please state the number of computers available in the school.

  _____

8) How did the school acquire the above computers?

        i)   School savings   ☐

        ii) Community Mobilization   ☐

        iii) Computer For School Kenya(CFSK)   ☐

        iv) Donations   ☐

        v) Constituency Development Fund(CDF)   ☐

Other methods please state_____

_____

9) How are the computers utilized?

10) State how the computers are allocated for various uses.

        i) Office   ☐

        ii) Departments   .   ☐

        iii) Learning   ☐

11). If your answer in the above question is yes, how would you rate ICT infrastructure in the

school?   a) Very Highly   ☐

          b) Highly   ☐

          c) Slightly High   ☐

          d) Low   ☐

          e) Very Low   ☐

12) To what extent does it impact on ICT Integration?

           a) Very greatly affects   ☐

           b) Greatly affects   ☐

           c) Moderately affects   ☐

           d) Slightly Affects   ☐

           e) No Effect   ☐

13) Do you have ICT proficiency skills?

           Yes   ☐

           No   ☐

14) If your answer in the above question is yes, please state how you acquired your ICT proficiency skills.

        i)   Provided as part of your college course   ☐

        ii) Provided by the employer   ☐

        iii) Provided by the school   ☐

        iv) Acquired privately   ☐

15) If the answer in the above question is No, please state the challenges that have hindered you from acquiring the same.   ☐

        i)   Lack of Finances

        ii) Inadequate time to study   ☐

        iii) Lack of motivation/incentives   ☐

        iv) Technophobia   ☐

Other reasons please state.

i) _____

_____

ii) _____

_____

iii) _____

_____

16) How would you rate personnel proficiency in ICT in the school?

a) Very Highly ☐

b) Highly ☐

c) Slightly High ☐

d) Low ☐

e) Very Low ☐

17). To what extent does it impact on ICT Integration?

a) Very greatly affects ☐

b) Greatly Affects ☐

c) Moderately Affects ☐

d) Slightly Affects ☐

e) No Effect ☐

18) How would you rate the levels of availability of finances for ICT integration?

a) Very Highly ☐

b) Highly ☐

c) Slightly High ☐

d) Low ☐

e) Very Low ☐

19) To what extent does it impact on ICT Integration?

a) Very greatly affects ☐

b) Greatly Affects ☐

c) Moderately Affects ☐

d) Slightly Affects ☐

e) No Effect ☐

20) How would you rate management support in ICT Integration?

a) Very Highly ☐

b) Highly ☐

c) Slightly High ☐

d) Low ☐

e) Very Low ☐

21). To what extent do they impact on ICT Integration?

a) Very greatly affects ☐

b) Greatly Affects ☐

c) Moderately Affects ☐

d) Slightly Affects ☐

e) No Effect ☐

22) In your opinion as a major stakeholder in the development of education in the region give suggestions that could provide the much needed impetus towards ICT integration in management of secondary schools.

i) _____

_____

ii) _____

_____

iii) _____

_____

Your participation has been greatly appreciated. Thank you

Questionnaire for Teachers

RE: *The factors affecting ICT integration in management of secondary schools in Kahuro*

district, Kenya

I hereby wish to inform you that I am conducting the above mentioned Research in your

District. Your school has been identified for the program that will determine the factors

affecting ICT integration in management of secondary schools.

We have attached this questionnaire for the said purpose and the information gathered will be

accorded **STRICT CONFIDENTIALITY**. Please respond factually.

SECTION A

Personal Data

(Tick Appropriately)

1. State your gender?

       a) Male   ☐

       b) Female   ☐

2. What is your marital status?

       a) Single   ☐

       b) Married   ☐

       c) Divorced   ☐

3. What age bracket are you within?

       a) Below 25 years   ☐

b) 26-35 years ☐

c) 36-45 years ☐

e) Above 46 years ☐

4. What is your level of education?

       a) K.C.S.E ☐

       b) Tertiary ☐

       c) University ☐

       d) Post Graduate ☐

5. How many years have you been in the Institution?

       a)   Below 5 years ☐

       b)   6-10 years ☐

       b)   11-20 years ☐

6. In which category do you belong to?

       a)   H.O.D Academic ☐

       b)   H.O.D Non-academic ☐

       c)   Teacher ☐

SECTION B

7. Has your school adopted ICT in its system?

          a)   Yes   ☐

          b)   No   ☐

8) Please state the number of computers available in the school.

  _____

9) How are the computers utilized?

---

10) State how the computers are allocated for various uses.

    iv) Office   ☐

    v) Departments   .   ☐

    vi) Learning   ☐

11). If your answer in the above question is yes, how would you rate ICT infrastructure in the

school?   a) Very Highly   ☐

                      b) Highly   ☐

                      c) Slightly High   ☐

                      d) Low   ☐

                      e) Very Low   ☐

12) To what extent does it impact on ICT Integration?

                      a) Very greatly affects   ☐

                      b) Greatly affects   ☐

                      c) Moderately affects   ☐

                      d) Slightly Affects   ☐

e) No Effect ☐

13) Do you have ICT proficiency skills?

Yes ☐

No ☐

14) If your answer in the above question is yes, please state how you acquired your ICT proficiency skills.

      i)   Provided as part of your college course ☐

      ii) Provided by the employer ☐

      iii) Provided by the school ☐

      iv) Acquired privately ☐

15) If the answer in the above question is No, please state the challenges that have hindered you from acquiring the same. ☐

      i)   Lack of Finances

      ii) Inadequate time to study ☐

      iii) Lack of motivation/incentives ☐

      iv) Technophobia ☐

Other reasons please state.

i) _____

_____

ii) _____

_____

iii) _____

16) How would you rate personnel proficiency in ICT in the school?

a) Very Highly ☐

b) Highly ☐

c) Slightly High ☐

d) Low ☐

e) Very Low ☐

17). To what extent does it impact on ICT Integration?

a) Very greatly affects ☐

b) Greatly Affects ☐

c) Moderately Affects ☐

d) Slightly Affects ☐

e) No Effect ☐

18) How would you rate the levels of availability of finances for ICT integration?

a) Very Highly ☐

b) Highly ☐

c) Slightly High ☐

d) Low ☐

e) Very Low ☐

19) To what extent does it impact on ICT Integration?

a) Very greatly affects ☐

b) Greatly Affects ☐

c) Moderately Affects ☐

d) Slightly Affects ☐

e) No Effect ☐

20) How would you rate management support in ICT Integration?

a) Very Highly ☐

b) Highly ☐

c) Slightly High ☐

d) Low ☐

e) Very Low ☐

21). To what extent do they impact on ICT Integration?

a) Very greatly affects ☐

b) Greatly Affects ☐

c) Moderately Affects ☐

d) Slightly Affects ☐

e) No Effect ☐

22) In your opinion as a stakeholder in the development of education in the region give suggestions that could provide the much needed impetus towards ICT integration in management of secondary schools.

iv) _____

_____

v) _____

_____

vi) _____

_____

Your participation has been greatly appreciated. Thank you

APPENDIX III

Questionnaire for Computer Laboratory Technicians

RE: *The factors affecting ICT integration in management of secondary schools in Kahuro district, Kenya*

I hereby wish to inform you that I am conducting the above mentioned Research in your District. Your school has been identified for the program that will determine the factors affecting ICT integration in management of secondary schools.

We have attached this questionnaire for the said purpose and the information gathered will be accorded **STRICT CONFIDENTIALITY**. Please respond factually.

SECTION A

Personal Data

(Tick Appropriately)

1. State your gender?

      a) Male ☐

      b) Female ☐

2. What is your marital status?

      a) Single ☐

      b) Married ☐

      c) Divorced ☐

3. What age bracket are you within?

      a) Below 25 years ☐

b) 26-35 years ☐

c) 36-45 years ☐

e) Above 46 years ☐

4. What is your level of education?

a) K.C.S.E ☐

b) Tertiary ☐

c) University ☐

d) Post Graduate ☐

5. How many years have you been in the Institution?

a)   Below 5 years ☐

b)   6-10 years ☐

c)   11-20 years ☐

SECTION B

6. Has your school adopted ICT in its system?

a)   Yes ☐

b)   No ☐

7) Please state the number of computers available in the school.

   _____

8) How are the computers utilized?

_____

9) State how the computers are allocated for various uses.

    i) Office   ☐

    ii) Departments   .   ☐

    iii) Learning   ☐

10). If your answer in the above question is yes, how would you rate ICT infrastructure in the

school?   a) Very Highly   ☐

                   b) Highly   ☐

                   c) Slightly High   ☐

                   d) Low   ☐

                   e) Very Low   ☐

11) To what extent does it impact on ICT Integration?

                   a) Very greatly affects   ☐

                   b) Greatly affects   ☐

                   c) Moderately affects   ☐

                   d) Slightly Affects   ☐

                   e) No Effect   ☐

12) Do you have ICT proficiency skills?

                   Yes   ☐

                   No   ☐

13) If your answer in the above question is yes, please state how you acquired your ICT proficiency skills.

       i) Provided as part of your college course   ☐

       ii) Provided by the employer   ☐

       iii) Provided by the school   ☐

       iv) Acquired privately   ☐

14) If the answer in the above question is No, please state the challenges that have hindered you from acquiring the same.   ☐

       i) Lack of Finances

       ii) Inadequate time to study   ☐

       iii) Lack of motivation/incentives   ☐

       iv) Technophobia   ☐

Other reasons please state.

    i) _____

        _____

    ii) _____

        _____

    iii) _____

        _____

15) How would you rate personnel proficiency in ICT in the school?

       a) Very Highly   ☐

       b) Highly   ☐

c) Slightly High ☐

d) Low ☐

e) Very Low ☐

16). To what extent does it impact on ICT Integration?

a) Very greatly affects ☐

b) Greatly Affects ☐

c) Moderately Affects ☐

d) Slightly Affects ☐

e) No Effect ☐

17) How would you rate the levels of availability of finances for ICT integration?

a) Very Highly ☐

b) Highly ☐

c) Slightly High ☐

d) Low ☐

e) Very Low ☐

18) To what extent does it impact on ICT Integration?

a) Very greatly affects ☐

b) Greatly Affects ☐

c) Moderately Affects ☐

d) Slightly Affects ☐

e) No Effect ☐

19)   How would you rate management support in ICT Integration?

a) Very Highly ☐

b) Highly ☐

c) Slightly High ☐

d) Low ☐

e) Very Low ☐

20). To what extent do they impact on ICT Integration? ☐

a) Very greatly affects

b) Greatly Affects ☐

c) Moderately Affects ☐

d) Slightly Affects ☐

e) No Effect ☐

21) In your opinion as a stakeholder in the development of education in the region give suggestions that could provide the much needed impetus towards ICT integration in management of secondary schools.

i) _____

_____

ii) _____

_____

iii) _____

_____

Your participation has been greatly appreciated. Thank you

Schedule of Activities for Year 2013/2014

ACTIVITY	TIME IN MONTHS													
Proposal Writing Chapter One	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	▓													
Literature Review	▓	▓	▓											
Research and Tool Development				▓										
Proposal Presentation and Defense				▓	▓									
Pre-Testing						▓								
Questionnaire Amendment						▓								
Data Collection							▓	▓	▓	▓				
Data Collection and Analysis											▓	▓	▓	
Report Writing												▓	▓	
Report Presentation and Defense														▓

Source: Researcher.

Research Activity Budget

	ACTIVITY	COST(KSHS)
1.	Typing	9,000
2	Printing papers	19,600
3.	Photocopy	24,600
4.	Binding	4,000
5.	Transport	16,000
6.	Internet	3,000
7.	Letters and telephone	1,000
8.	Meals	4,500
9.	Contingencies	3500
	TOTAL	**86,200**

Source: Researcher.

LETTER OF TRANSMITTAL

LETTER TO RESPONDENTS

Waweru S. Macharia

Karatina University

P.O. Box 1957

Karatina.

Dear Respondents

RE: FACTORS INFLUENCING ICT INTEGRATION IN MANAGEMENT OF SECONDARY SCHOOLS IN KAHURO DISTRICT

I am a student of Karatina University. I am currently undertaking a research on factors influencing ICT integration in management of secondary schools. After the completion of the research, it will give recommendations on how to improve ICT integration in management of secondary schools. I therefore request your assistance and co-operation in attaining the above requirements hence I am kindly requesting you to fill in the attached questionnaires as an individual. I also would like to assure you that the information you will give will be treated as confidential and will be used for academic purpose only. Please do not write your name on the questionnaire.

Yours Sincerely,

Waweru .S. M.