INSTITUTIONAL AND HEADTEACHER FACTORS INFLUENCING INTEGRATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN SECONDARY SCHOOL MANAGEMENT IN KAMUKUNJI AND STAREHE DISTRICTS, KENYA

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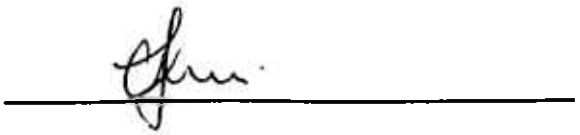
DECLARATION

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



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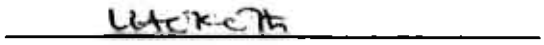

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DEDICATION

This research report is dedicated to my dear husband, Christopher M. Mutunga; my children: Carol Jedidah, Gloria Ndunge, Joseph Mutunga and Emmanuel Kitoo; and to my parents Kitoo Nzuva and Jedidah Kitoo.

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TABLE OF CONTENT

Content **Page**

CHAPTER ONE

INTRODUCTION

CHAPTER TWO

LITERATURE REVIEW

CHAPTER THREE

RESEARCH METHODOLOGY

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

LIST OF FIGURES

Figures **Page**

LIST OF TABLES

Table **Page**

ABBREVIATIONS AND ACRONYMS

BoG	Board of Governors
CFSK	Computers For Schools Kenya
DEO	District Education Officer
DC	District Commissioner
EFA	Education For All
ESR	Economic Stimulus Recovery
HoDs	Heads of Departments
ICT	Information and Communication Technology
IPS	Internet Service Provider
KCSE	Kenya Certificate of Secondary Education
KCPE	Kenya Certificate of Primary Education
KESSP	Kenya Education Sector Support Programme
KNEC	Kenya National Examination Council
MDGs	Millennium Development Goals
MoEST	Ministry of Education Science and Technology
MoE	Ministry of Education
NEPAD	New Partnership for Africa's Development
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development

PC	Personal Computer
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
TAM	Technology Adoption Model

ABSTRACT

This study sought to establish the institutional and headteacher factors influencing integration of information and communication technology in secondary school management in Kamukunji and Starehe Districts, Kenya. It set out to establish the influence of headteachers perception, experience of teachers in ICT, training of teachers, school policy and ICT infrastructure in ICT integration in management. The study was guided by five objectives and five research questions related to the objectives. The objectives were to establish to what extent the headteachers perceptions towards ICT influence its integration in secondary school management; establish the extent to which experience in ICT influences its integration in school management; determine how training of teachers in ICT influences its integration in secondary school management; identify to what extent school policy on ICT influences its integration in school management and determine how access to ICT infrastructure influences its integration in secondary school management. A survey research design was adopted for the study. The target population included principals, deputy headteachers and heads of departments from public secondary schools in Kamukunji and Starehe Districts. All the 18 principals, all 18 deputy headteachers and 90 heads of departments were used for the study. The study used both probability and non probability sampling methods. Data was collected using questionnaires and observation schedule. Data was analysed using quantitative approach which involved descriptive statistical procedures. The study established that institutional factors have influence on the integration of ICT in management. Majority of the schools did not have adequate ICT infrastructure to support ICT integration in management. The study also established that ICT skills were inadequate for ICT integration. The study also established that ICT policy was lacking in most schools. Perception held by the principals and teachers had a significant influence on ICT integration in management. In view of the above findings the study recommends that the government should address the issue of ICT infrastructure by availing ICT equipment, enhance connectivity to reliable power, improve connectivity to various internet services and augment human resource capacity by organizing well structured training for principals and teachers. Schools should employ support staff such as computer assistants before embarking on the full scale implementation of ICT integration in management in Kamukunji and Starehe Districts and indeed in all districts in Kenya. The study also recommends that schools should have an operational ICT policy to enhance ICT integration in secondary school management. On suggestions of further research, a study on the impact of hand held digital devices like mobile phones on secondary school management be carried out, the role of MoE in ICT integration in school management and a similar study be carried out in a rural set up.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Humanity is currently in an electronic age which is characterized by bridging the gap between distance and time, giving way to information revolution built around information and communication (Etudor-Eyo, Ante& Emah, 2011). Information is recognized as vital resource in economic, social and political development. Knowledge provides individuals with competitive advantage in whichever environmental situation they may find themselves. Information and communication technology (ICT) is one way of accessing information and hence empowering people to compete effectively in society. Unfortunately, most developing countries including Kenya find themselves in situation of ICT deprivation (Kipsoi, Chang'ach, and Sang, 2012). This leads to low access to information.

The United Nations Education, Scientific and Cultural Organization (UNESCO), defined ICT as the range of technologies that are applied in the process of collecting, storing, editing, retrieving and transfer of information in various forms (UNESCO, 2002). Information and communication technology could therefore, be understood as all those electronic devices that are used in broadcasting telecommunication and all other electronically meditated information gathering and dissemination processes. Information and communication technologies can be

divided into two groups: Traditional ICTs which include radio and television and the new ICTs, namely internet practices and information technology. This includes Computer technology, which is computer based course, computerized tests, word processor, graphics software, spreadsheets, databases, and presentation software. It also includes telecommunication software which offers distance courses, distributed educational resources, e-mail, video conferencing, bulletin boards, white boards and charts (Juma, 2004).

The job of secondary school principal today is a highly complicated one due to the emerging challenges that have risen as a result of rapidly changing technology. According to Okumbe (2001) the principal is charged with the task of managing curriculum and instruction, staff, school plant, finances and school community relations. According to Odhiambo (2004), these tasks pose major challenges to school principals since with rising numbers of students and staff in the schools; they have to plan carefully on how to utilize resources (both human and physical) available to them in order to achieve the goals of the institution. According to Persuad (2002), management tasks would be automated and streamlined, if ICT were integrated in leadership training, giving more time for managers to focus on instruction. According to Davies (2002), the success of ICT rests on proactive school leaders who will give timely support to the integration of ICT in school operation.

According to Kidombo (2011), integration of ICT in management practices has a trickle down, multiplier effect. More school members develop an interest in the use of ICT in other areas such as teaching and learning. It is essential, therefore that managers have an understanding of the nature of new technology, the organizational needs and objectives. The headteacher as an effective leader must facilitate access to ICT by teachers, students and the administrative staff. Should ensure equipment maintenance by training their personnel to do the maintenance rather than depend on commercial technicians. The headteacher ensures professional development of his teachers by encouraging their active participation in seminars and workshops. The headteacher should ensure effective supervision of computer labs making an inventory of the equipment and inspecting the state of the labs and the equipment on a regular basis.

Telem (2001) conducted a study in school 4 in Hougang, North zone of Singapore and found out that ICT helped in streamlining administrative processes in the area of communication. Information and communication technology was found a very important tool for information dissemination as it helped communicate whatever information was available to the staff the moment they logged in as they read, knew and acted. In Japan, Telem (2001) reported that project management and implementation is enhanced through ICT utilization. He concluded that ICT was effective in eradication of distortion, duplication of information thus enhancing effective communication.

The Ministry of Health in Ghana in 2003 enumerated the significance of ICTs in health sector to include improving access to health services, improving quality, efficiency in both management and technical through reliable information dissemination systems, improving collaboration by providing support to overall planning and sector assessment process and improving funding by providing broadcast facility for marketing the health sector. These are evident of organizational administrative effectiveness through the use of ICTs in which secondary schools are not left out.

Obeng (2004) observed that use of internet and intranet, reduces administrative cost and administrative inconveniences. Anamuah- Mensah (2009) noted that the use of computer application is useful in accounting and finance, financial control, sales, marketing and manufacturing. The Kenyan Government commitment to the integration of ICT in education has been indicated through development of a number of strategies. These include priotizing ICTs in Education in National Development plan (2002- 2008), the development of Kenya Education Sector Support Program (KESSP) in 2005 in which ICT featured as one of the priotized area with an aim of integrating ICT in teaching and learning process. This was followed by development of National Policy for ICT in 2006. The policy has a section that sets out objectives and strategies for use in education. Lastly, in 2006 the Ministry of Education Science and Technology (MOES&T) introduced National ICT strategy for Education and Training. This document has several

components each with its own statement of strategic objectives and expected outcomes.

Even with this commitment from the government, Zeleza (2005) observed that ICT was not fully embraced in management in schools. He further noted that there were various drawbacks to attaining this development agenda. These included problems associated with infrastructure, technical expertise, regulatory, distribution, social and economic issues. To date secondary school principals are being challenged in various educational fora like seminars and headteacher meetings to embrace and utilize computer technology. During a workshop for school principals at the Kenya Education Staff Institute (KESI), John Temba the head of ICT4E in the Ministry of Education presented a paper: National ICT Policy and E-Government Strategy on 12thAugust, 2011, asked the principals to familiarize themselves with all government ICT policies and to evaluate the extent to which their schools had implemented the guidelines. He noted from the District Education Officers' reports that information posted in the internet by the ministry for the attention of the principals took long to be retrieved or never retrieved at all. He further noted some principals did not have personal and even institutional e-mail addresses. This was found to be true for Kamukunji and Starehe.

Inadequate usage of ICT in educational management by headteachers in Kenyan secondary schools is an indication that problems exist in the institutions and the users. This is true in Kamukunji and Starehe districts. It is against this background that this study seeks to establish the institutional and headteacher factors affecting ICT integration in secondary school management.

1.2. Statement of the problem

The Kenyan government commitment to the integration of ICT in education has been indicated through development of a number of National Policies on ICT in 2006. The process has had the benefit of sound advice from officials and stakeholders (teachers and head teachers) and perhaps, more importantly, strong support from the Ministry of Education Science and Technology (MoES&T) which introduced National ICT strategy for education and training (GoK,2006). The progress has also been supported by Computers For Schools Kenya (CFSK) to equip the schools with computers so as to integrate ICT in school management.

Even with all this commitment from the GoK, ICT seems not to have been embraced in management in schools. There seems to be various drawbacks to attaining this development agenda, hence the need for this study to look at the

institutional and head teachers factors influencing integration of ICT in secondary school management in Kamukunji and Starehe districts, Kenya.

1.3 The Purpose of the study

The purpose of this study was to analyse the institutional and head teacher factors influencing ICT integration in secondary schools management in Kamukunji and Starehe districts in Kenya.

1.4 Objectives of the study

This study aimed at achieving the following objectives:-

i To establish the extent to which the head teachers' perceptions towards ICT influence its integration in secondary school management.

ii To determine how training of teachers in ICT influences its integration in secondary school management.

iii To determine how access to ICT infrastructure influences its integration in secondary school management.

iv To identify the extent to which school policy on ICT influences integration of ICT in school management.

v To establish the extent to which head teachers' experience in ICT influences its integration in school management.

1.5 Research questions

This study sought to answer the following questions:-

i To what extent do head teachers' perceptions towards ICT influence its integration in secondary school management?

ii How does training in ICT influence its integration in secondary school management?

iii How does access to ICT infrastructure influence the integration of ICT in secondary school management?

iv What is the influence of school policy on ICT on its integration in secondary school management?

v To what extent does head teachers' experience in ICT influence its integration in secondary school management?

1.6 Significance of the study

Ministry of Education (MoE) may find the study findings a useful point of reference and comparison and a basis for innovations and implementation of ICT integration in secondary management. Ministry of Education (MoE) may use the information in planning especially in the provision of ICT infrastructure and retraining of teachers in ICT. The DEOs may get insights on the status of ICT integration on the ground and recommend to the ministry for change in curriculum development for teacher training. Kenya Education Management

Institute (KEMI) may find the findings useful in designing relevant curriculum for in-service training for teachers. The headteachers may get insights of ICT management practices and importance of ICT in the 21st century and hence enabling them in facilitating the empowerment of the students and making them relevant in their career choices. Headteachers may be encouraged to facilitate teachers to train and also to provide ICT facilities in their schools. The students may also benefit when curriculum delivery is improved by use of ICT. All the stakeholders may benefit by getting feedback from the schools timely. Data obtained from the study may be used as a basis for future research.

1.7 Limitations of the study

The principals and teachers may give responses that tend to cover their weaknesses in integrating ICTs in management for purposes of safeguarding their self-interest. The researcher intervened by using observation method to ascertain some of the information given.

1.8 Delimitation of the study

In this study not all secondary schools were covered. The study focused on public secondary schools in only two districts, Kamukunji and Starehe districts which are from an urban area in Kenya. Only the headteacher, the deputy headteachers and HoDs were included in the study. Computer teachers were not included in the

study if they were not HoDs. Therefore the results obtained may not reflect the overall situation of ICT integration in secondary school management.

1.9 Assumptions of the study

The study assumed that, the institutions staff were willing to offer the information freely and the findings generated from the schools could be generalized to all other schools.

1.10 Definition of significant terms

Attitude refers to the persistent tendency to feel and act in a particular way towards some objects. In this study it is synonymous with perception.

Hardware refers to computer equipment such as monitor, keyboard, mouse, printer, disks driver and scanner.

Headteacher factors refers to personal characteristics that may influence ICT integration in secondary schools

ICT access refers to the availability of ICT hardware and software in a school.

Information and communication technology (ICT) refers to a wide range of hardware and software technology components such as computer, telecommunications, internet, LCD projectors, CD ROM, video and digital cameras that can be used by teachers to support their work.

Information technology refers to the science of managing and processing information using computers.

ICT infrastructure refers to basic physical and organizational structures needed for the integration of ICT.

ICT policy refers to overall view of the goals, objectives, mission and vision of the school for the implementation of ICT integration.

Institutional factors refer to the school factors that influence ICT integration in school management.

Integration refers to inclusion of ICT in school administration and management.

Internet refers to an information gathering tool utilizing the World Wide Web using search engines and http address. Connection is through a phone or cable line

Management refers to the process of designing developing and effecting organizational objectives and resources so as to achieve the predetermined organizational goals.

Principal tasks refers to the duties performed by secondary school principal on a daily basis including maintenance of school plant, students personnel, curriculum and instruction, public relations, financial management and staff development

Perception refers to the way an individual views and interprets their impressions in order to give meaning to their environment.

Software refers to MS- office suite, internet and E-mail.

Training refers to the process of acquiring skills necessary for ICT integration in management.

1.11 Organization of the study

This study is organized in five chapters. The first one is the introduction. This consists of the background to the study, statement of the problem, the purpose of the study, objectives and research questions, significance of the study, limitations, delimitations and assumptions of the study and definition of the significant terms. The second chapter is literature review and consists of introduction, global context of ICT in education, ICT policy in education, leadership and ICT, training and standards in technology, uses of ICT in management, role of the computer in decision making, summary of the literature reviewed, theoretical and conceptual framework.

The third chapter describes the methodology used in the study. This includes; introduction, research design, target population, sample size and sampling procedures, research instruments, instrument validity, instrument reliability, data collection procedures and data analysis techniques. The fourth chapter is data analysis presentation and interpretation. The fifth chapter consists of the summary of the findings, discussion, conclusion, recommendations and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The purpose of this chapter was to review related literature to provide a framework of answering the research questions identified in the study. This framework included review of the literature as it relates to technology in the following areas; the concept of ICT in management, global context of ICT integration in education management, ICT policy on integration of ICT in education management, leadership of principals and ICT, Infrastructure availability on ICT integration in education management, training and standards in technology, Training and standards in technology for school administration, uses of ICT in management, technology in management, Decision making and professional development.

2.2. The concept of ICT in management

By its very nature the ICT phenomenon is relatively new in the developing world. Available data, suggest that majority of developing countries such as Kenya in sub-saharan Africa are lagging behind in the information revolution. (Zhao and Frank, 2003). Not surprisingly, the quest for integration of ICT in educational management has been problematic and will require fundamental shifts in the regulatory environment as well renewed attention to public- private partnerships

and social services. For example, developed countries have 80 percent of the words internet users, while the total international bandwidth for all of Africa is less than that of the city of Sao Paulo, Brazil (Campbell and Sellbum, 2002).

There is little doubt that Sub-Saharan Africa's population is missing out on the boons of information and communication technology in educational management (Bigum, 2000). As a region lagging behind in integration, use and innovation in ICT sectors, its people are missing out on a better education and well managed education systems and entities (Zhao and Frank, 2003). Studies (BECTA, 2003; Yang, 2003) indicate that ICT has played an important role in improving management in Educational systems through for example availing data widespread to parents and the public at large through central administration websites and in some cases through direct access to central data bases by school personnel. As such this study examines the institutional and headteacher factors influencing ICT integration in secondary school management.

2.3 Global context of ICT integration in education management

Today, most countries include ICT integration, either in the national policies or in the laws pertaining to the education sector. In Australia, for example, the commonwealth government has set goals for schools in relation to ICT development. The same trend is seen in Indonesia, Malaysia, Uzbekistan, Vietnam and others, where the national governments set goals for ICT integration

in education. In Cyprus utilization of information technology and information systems in educational management and administration still remains at early stages (Empirica, 2006). Information and communication technology (ICT) plays a vital role in supporting powerful school leadership and efficient management and administration needs to provide a solid base on which school functioning and decision making are supported. According to Poole (1998), educators in United States of America are able to put computers to good use. By use of productivity tools such as word processors, data base management software, communication systems.

2.4 ICT policy on integration of ICT in education management

Hawkins (2004) in ten lessons for ICT and education in the developing world notes that while many ministries of education around the world have made the commitment to computerize schools, few have developed coherent strategies to fully integrate the use of computers in administration. According to Chisenga (2006) educational institutions are required to develop an ICT strategy that incorporates the goals of the institution and how this will be met using ICTs, provide a supporting framework for the development of ICT in the institution and outline how the full potential of ICT is to be exploited to support all aspects (Chisenga, 2006). Kenya disseminated its ICT policy during the year 2006 (Ministry of Information and Communication, 2006) with its vision "To improve

the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable and affordable ICT services". Section on information technology sets out the objectives and strategies that pertains to ICT and education.

ICT in school management has been elusive since most of the school managers are either computer illiterate or technology ignorant, but the current global technological changes requires modernization an notes that despite the apparent benefits of the use of ICT for educational purpose, studies showed that in many cases, the learning potential of ICT is deprived as many educational administrators are still not fully literate and do not use it in the school management and teaching. It is also noted that where policy makers continue to introduce strategies for ICT, with the intention of increasing its use in schools, such strategies are likely to have an effect on school level barriers which include lack of ICT equipment, the cost of acquiring, using and maintaining ICT resources, obsolesce of software and hardware, unreliability of equipment, lack of technical support and lack of teachers involvement in implementing change. The teacher level barriers are more difficult for policy makers to tackle as it is the teachers themselves who need to bring about the required changes in their own attitude and approach to ICT (BECTA, 2004)

2.5 Infrastructure availability and ICT integration in education management

Infrastructure for online learning is crucial. Many African countries have a very low base from which to implement ICT interventions in education management in schools. It is estimated that 1 percent of people in Africa have access to the internet (Bigum, 2000). According to Power, Tom, Sankale, James (2007), this figure has dramatically changed with the introduction of the mobile phones and other hand held digital devices. Schools do not budget adequately for maintaining the use of ICTs, and instead dedicate their ICT budget, where they exist to the purchase of computers and software. In schools the costs of installation, maintenance and expansion remain hidden unlike the commercial sector where the capital costs of a Personal computer (PC) represent only a fifth of the yearly cost of running that PC.

In the Kenya Education Sector Support Programme (KESSP), the section on ICT for Educational investment programme puts a clear emphasis on developing infrastructure and capacity in particular human resources, in order to develop the skills which will be needed tomorrow. This fits well with the ICT scoping study carried out by Digital links in 2004 on behalf of MOEST and funded by DFID, which highlights the inadequate number and capacity of computers, as well as lack of access to the internet. School Net Africa (2004) notes that the biggest challenge with encouraging African teachers to use ICT in their teaching is the lack of sustainable access to ICT. Many African teachers complain that where

their schools do have computer rooms, their access is restricted to certain times which are frequently inconvenient. This is as a result of having to share access to a limited number of computers with students, administrators and other teachers.

SAIDE (2003) report indicates that key problem in ICT use is poor ICT resource provision, internet connection was unavailable or unreliable, arrangements were not made to ensure sufficient access to school computers for either teachers or their learners and that teachers lacked knowledge on how to browse on the web. Although this study focused on the integration of ICT in the teaching process it also agrees with the current study as the some factors were noted to hinder ICT integration in management.

2.6 Leadership of the principals and ICT integration

The concept that principals are educational leaders is not new. However, the idea that computer technology aids principals in their leadership role is new. According to Sager (1999), the computer shapes the form and context of the principal's work. School managers who have adopted more progressive ICT oriented Management Styles over time feel that ICTs helped the change, but they do not acknowledge ICTs as the catalyst for change, instead they cite reflection upon experience, classes taken and the context or culture of the school (Noudu and Jasen, 2002). Those principals using computer as a tool for better

communication become more involved in the complex worlds of educational leadership through dialogue with other school principals and community leaders in general.

2.7 Training and standards in technology for school administration

Training goals vary but are based on training schedules using workshops to cover the various skills. In general, training is seen more in terms of time spent on training than in terms of outcomes such as proficiency in the skills, comfort with technology or experience in integrating use of the internet into management. Training generally includes basic computer literacy, exposure to the basics of email, search engines, website design and the integration of technology in the classroom and management in a concentrated period with groups at various levels of competence. Education and training sector has a major role to play in the implementation of the proposed ICT policy. First, the sector itself is a major user of ICT, not only in education, training and research but also in management of the sector. According to Kipsoi, Chang'ach, and Sang (2012), ICT policies must be dynamic, cost effective, adaptable, and differentiated between sectors and between the various segments of educational management in order to contribute effectively to education management.

Most of the literature discusses the lack of training and standards in the area of technology for administration. The ministry of Education Sessional Paper (2005) identifies inadequate in-service programmes for teachers as a significant issue in the integration of ICT in education Pelgrum and Plomp (1993) studied the use of computers in schools and concluded that training in the use of computers needed to be considered for effectiveness of using computers in schools. Ritchie (1996) noted that one reason for the reluctance of school administrators to embrace the benefits of educational technologies is that most received their education at a time when computers were not yet incorporated into educational arena and they may have limited experience with technologies. Lloyd and Gressard (1984) stated that gender, age, training, family background, access to computers, skill and experience influence the perceptions towards computer use. In a study carried out by Gakuu, Kidombo, Bowa, Nderitu, Mwangi and Gikonyo noted that where the principal had been trained it had a trickledown effect. This was observed in Uthiru girls where the principal has a higher national diploma in information technology (IT) and at Green Garden schools where the director has a lot of interest in e-learning. Though this study focused in pedagogical integration, the current study will borrow from these findings to find out if the same is replicated in ICT integration in Kamukunji and Starehe Districts secondary schools

Odera (2002) stated that although teachers take courses in leadership, management and challenges of special education at college level none require

administrators to be technologically competent. Telem (1991) suggested that if administrators are to perform the tasks of technology coordinators, instructional technology must become an integral part of the curriculum of universities and other institutions that are preparing school administrators.

2.8 Uses of ICT in school management

According to Maki (2008), schools in Cyprus use ICT both as a subject in the school curriculum (secondary schools) and as a teaching aid. Although the Cyprus government has taken significant steps regarding ICT in schools, the utilization of ICT in educational management and administration still remains at early stages. The current study will borrow from the work of Maki since this is also true in Kenyan secondary schools. However, it was also noted that ICT implementation could enhance administration and management in schools in Cyprus in reference to many fields in school administration and management. These can also be applicable to the Kenyan secondary schools as noted by Ng'ang'a, Kosgei And Ng'ang'a in a paper Titled: Adoption and Use of ICT in Enhancing Management of Public Secondary Schools. A survey of Kesses Zone Secondary Schools in Wareng District. According to Ng'ang'a, Kosgei and Ng'ang'a ICT programmes can be used in recording teachers' personal data and therefore used for staff management. Timetable administration which will help the principal in the management of curriculum and instruction. The programme can be used in management of the school budget. ICT could help managers to

retrieve evaluative information in relation to budgets and academic results. ICT can be used to build a data base in relation to books available in library and information regarding those books.

With all the benefits of using ICT in secondary school management the current study will seek to analyse the institutional and headteacher factors influencing its integration in the management of schools.

2.9 Role of Information and Communication Technology in decision making

One of the major roles of school principal is decision making. Information and communication technology can aid decision making process for principals as it helps in effective communication with teachers, students and other stakeholders. According to Hausman, Crow & Sperry (2000), as quoted by Obuoda (2009) technology aids the decision making process, as it allows inclusion of all groups of stakeholders in decision-making process. Educational managers need have basic information on quality teaching, student and teacher flows, probably school supplies, and how much the school as a system is spending on various inputs, in order to make the basic resource allocation decisions. This necessitates participative leadership with well-developed interpersonal skills. The only bottleneck for managers not using technology in decision making process is their lack of expertise, time plan and implementation of a system which allows use of technology in decision making (Crouse, 1997).

According to Yee (1998) as quoted by Obuoda (2009) educational leaders (principals) must continue to improve their technological skills for personal improvement. He believed that an important leadership competency on technology is the desire to continue to learn with staff members to see principals working comfortably with technology as model for their aspirations to learning the same. Porter (1993) suggested that introducing administrative technology requires user participation in its planning and implementation.

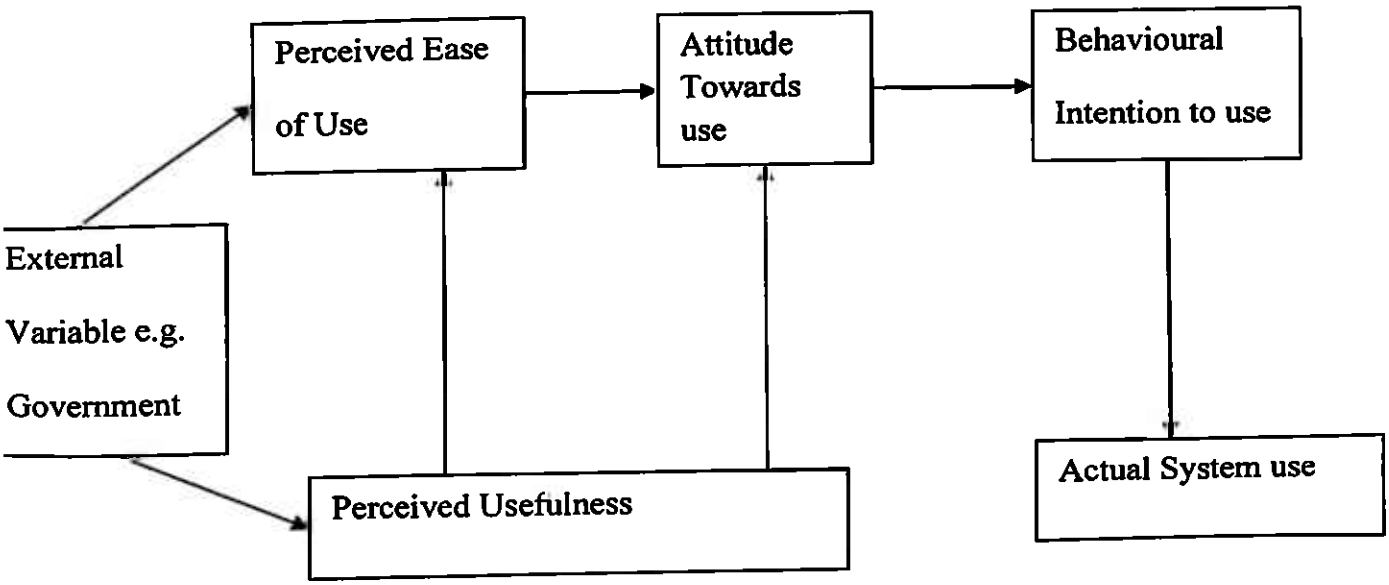
2.10 Summary of the literature reviewed

In order for administrators to use computers to become more efficient, principals must understand the facets of the technology process. Mecklenburger (1989) suggested that administrators must understand both the capabilities and limitation of technology. Only then can they plan for, budget for, purchase carefully, install properly and maintain dutifully. It is up to them to select the data to be put into computers, and they must choose with care how the computers are used. It is important that administrators be able to use hardware and software used in schools. It is important that they be provided with simple, flexible, user-friendly hardware and software as well as information on how to use it (Hadley &Sheingold, 1993)

2.11 Theoretical framework

This study was based on Technology Adoption Model (TAM). Technology Adoption Model (TAM) was developed by Fred Davis and Richard Bagozzi (Bagozzi, Davis, & Warshaw, 1992, 1989). It is an information systems theory that models how users come to accept and use a technology.

Figure 2.1: Technology adoption model



Source: Bagozzi, Davis& Warshaw (1992)

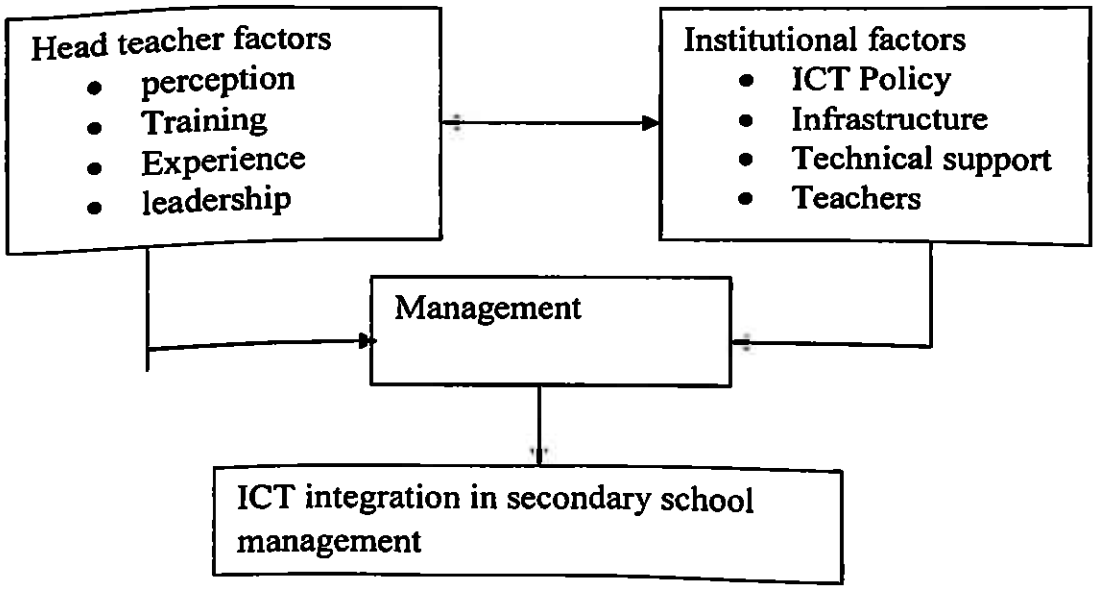
This theory advocates that when users are presented with a new technology, there are two specific beliefs that influence their decision about how and when they will use it. The first is Perceived Usefulness (PU). This is the degree to which a person believes that using a particular system would enhance his or her job performance in this case school management. It provides a basis for determining ICT perceptions and factors affecting the usage of ICT in school management. The

second is Perceived Ease of Use (PEOU). This is the degree to which a person believes that using a particular system would be free from effort as shown in figure 2.1. When the headteacher perceives that ICT is important in making his/her work efficient and effective, then he/she would ensure ICT facilities are provided in the school. When he receives training it becomes easy to apply ICT in the administrative processes. The headteacher becomes a model for ICT integration in the school system. According to Davis (1989), a social system is a set of interrelated units that are engaged in joint problem solving process to accomplish a common goal. In this study the common goal is ICT integration in secondary school management.

2.12 Conceptual framework

The relationships between the independent and dependent variables are shown in figure 2.2 below.

Figure 2.2: Relationship between the independent and dependent variables.



The independent factors are intertwined and availability of ICT infrastructure, skills, positive perceptions, technical support, training, support from the management and adequate budgetary allocations for development and maintenance of ICT infrastructure ensures managers can effectively and efficiently use ICTs to promote school management. The absence of these factors hinders the integration of ICT in management.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the plan and methodology that was adopted by the researcher in order to reach the sampled population, collect and analyze data so as to achieve the objectives and answer the questions of this study. It consists of the target population, research design, sample size and sampling procedures, research instruments, validity of the instruments, reliability of instruments, data collection procedure and data analysis techniques.

3.2 Research design

This study used survey design which enabled the researcher to gather large scale data in order to make generalizations. The data was collected from the heads of departments (HoDs), deputy headteachers and principals in the public secondary schools in Kamukunji and Starehe districts. The design was preferred over others since it involved systematic collection of data from the principals, HoDs and deputies using questionnaires and observation schedules. The findings were viewed to be both quantitative and qualitative in nature.

3.3 Target population

Mugenda (2003) defines populations as an entire group of individuals, events or objects having common observable characteristics. The target population is defined by Best and Kahn (1998) as the small portion of the population selected for observation and analysis. According to the D.E.Os Kamukunji and Starehe Districts, there are 7 and 11 public secondary schools respectively.

The target population for this study was 18 schools and therefore 18 principals, 18 deputy headteachers and 130 HoDs. It targeted the HoDs, since they are major agents of ICT integration in management in their departments. The principals and deputy headteachers were targeted because they are major users of ICT, key in policy formulation and implementation in their schools and therefore key in the integration of ICT in school management.

3.4 Sample size and sampling procedures

To minimize sampling errors, the sample size for this was large and covered all the 18 public secondary schools in Kamukunji and Starehe districts. There are five common departments in each school. However some schools have more than five departments. In schools where there are more than five departments, simple radom sampling was used to get the HoDs to participate in the study. The study utilized both probability and non-probability sampling procedures.

3.5 Research instruments

Data collection was done using two tools. These were questionnaires for the headteachers and another one for both deputy headteachers and HoDs, and observation guide. The questionnaire is suitable for the collection of information, such as perceptions and opinions which cannot easily be observed (Fraise & Piaget, 1970). Questionnaire is very flexible tool and it is impersonal. The questions do not change according to how the replies develop (Walliman, 2005). The headteachers questionnaire had three sections: Section A: Demographic information, Section B: Status of ICT in the school, Section C: Challenges facing integration of ICTs in school management. Questionnaire for the deputy headteachers and HoDs will have five sections; Section A: Focusing on demographic information, Section B: Perception of HoDs towards the use of ICT in education, Section C: Adequacy of ICT resources and related software in the school, Section D: adequacy of HoDs preparation to use ICT and Section E: Other information. The observation schedule had sections for comments on the number of computers available, those in use and those not in use. It had a section on identification of the availability of technical support and software available in schools. The observation schedule recorded naturally occurring behaviour and avoided some of the disadvantages associated with the questionnaires.

3.6 Instrument validity

Validity refers to the appropriateness, meaningfulness and usefulness of the specific inferences made from the test scores (Borg and Gall, 1989). The researcher used content validity which is a measure of degree to which data collected using a particular instrument represents a specific domain of indicators or a content of particular concept (Mugenda and Mugenda, 2003). Triangulation was used to validate the instruments. Source triangulation was used where the deputy headteachers and HoDs responded to similar questions. Method triangulation was used by using questionnaires and observation schedule.

3.7 Instrument reliability

Mugenda & Mugenda (2003) define reliability as a measure of the degree to which a research instrument yields consistent results after repeated trials. To ensure reliability of questionnaires a pilot study was carried out. The questionnaires were pilot tested in four randomly selected schools. A split-half method was used to test reliability. All the items which had the likert type scale were split into two by placing odd numbered in one subset and even numbered items in another subset. This was to divide the scores of each individual in two sets of scores. A correlation Coefficient using Pearson's product moment was computed on the two subsets whose value vary between 0.00- +1.00 (Kothari,2004). For this study the value that would tend to + 1 was more reliable.

This was done using Pearson Product Moment Correlation formula indicated below.

$$\frac{\sum xy - (\sum x \sum y)}{\sqrt{\left(\sum x^2 - \frac{(\sum x)^2}{N}\right) - \left(\sum y2 - \frac{(\sum y)^2}{N}\right)}}$$

Where x= even scores, y= odd scores

$\sum xy$= sum of the gross product of the values of each variable

$(\sum x)(\sum y)$ =product of the sum of x and of y.

$\sum$= Sum of Values.

The instrument reliability for this study was found to be 0.82 for the HODs, 0.84 for the deputy head teachers and 0.84 for the head teachers. Therefore the instruments were found to be reliable.

3.8 Data collection procedures

A permit from the National Council of Science and Technology was obtained. After obtaining the permit, the researcher made courtesy call to the County Director of Education and Provincial County Director to inform them of the intended study. The researcher also paid courtesy calls to the school principals to set a schedule convenient to each school, for administration of the questionnaires and observation. The researcher administered the questionnaires personally to

ensure high response rate. The researcher then visited the schools and collected quantitative data from the mentioned persons.

3.9 Data analysis techniques

Data analysis is the process of bringing order and meaning to the raw data collected (Mugenda & Mugenda, 2003). Data analysis involved cleaning up, reduction, differentiation and explanation. Data clean up involved editing, coding and tabulation in order to detect any anomalies in the responses and assign specific numerical values to the responses for further analysis. Analysis was carried out per question. Some of the qualitative data from the open ended questions was classified into themes and thematic analysis was done through discussion. The coded data was analyzed using descriptive statistics. The study used the Statistical Package for Social Sciences (SPPS) to derive frequencies and percentages from which interpretation and presentation was made. Data presentation is inform of percentages, frequency tables, and charts.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter gives a detailed analysis of the research findings followed by interpretation of the same. In this study two types of questionnaires were used to collect data from the respondents. These were the principals' questionnaire, deputy head teachers' questionnaire which was the same as that of the heads of department. The findings were then tabulated. Responses of a particular type of questionnaire were treated as a single stratum regardless of their variations in terms of gender experience and training.

4.2 Questionnaire return rate

A total of 17 principals' questionnaires were issued to the respondents. Fifteen (15) were returned back. For the deputies, seventeen (17) questionnaires were issued and 15 were returned. For the HoDs, 85 questionnaires were issued and 70 were returned. Data collected was tabulated as per the questionnaire systematically covering all the items as per the research objectives.

4.3 Demographic data analysis

It was very necessary for the study to gather data on the headteachers', their deputies and heads of departments' background in terms of age, gender and academic qualification. These would directly or indirectly influence the integration of ICT in secondary school management. The data of the respondents were then summarized as follows:

4.3.1 Gender of the respondents

Gender was considered important in this study because it could negatively or positively influence the integration of ICT in school management. Menjo and Boit (2010) noted that male teachers tended to use computer more than their female counterparts and they noted that it was important to take gender into account during ICT implementation in Kenya's secondary schools by laying more emphasis on the training and encouragement of more female teachers to use ICT in school management.

Table 4.1

Classification of respondents' by gender

Gender	Headteacher	%	Deputy headteacher	%	HoDs	%
Male	9	60.0	9	60.0	23	32.9
female	6	40.0	6	40.0	47	67.1
Total	**15**	**100.0**	**15**	**100.0**	**70**	**100.0**

Table 4.1 shows that the respondents for this study were predominantly male headteachers and deputy headteachers and female HoDs. Out of a 100 respondents, 60.0% were male headteachers and deputy headteachers and 67.1% female HoDs.

4.3.2 Distribution of headteachers, deputy headteachers and HoDs by age.

Age was also another factor to consider in this study. Respondents' age determines the extent to which ICT could be integrated in school management. According to Makhanu (2010) in his study, "Principals' literacy in Information and Communication Technology (ICT): Toward Improving Secondary Performance in Kenya, he noted that middle aged headteachers (41-50 years) were more ICT literate than older ones from 50 and above. This indicates that age is important in ICT integration since it affects ICT literacy. Data were collected and tabulated as shown in Table 4.3 below.

Table 4.2:

Respondents' age

Age in years	Headteachers	%	Deputy headteachers	%	HoDs	%
26-35	0	0.0	0	0.0	2	2.9
36-45	2	13.3	7	46.7	17	24.3
46-55	11	73.4	8	53.3	26	37.1
56 and above	2	13.3	0	0.0	25	35.7
Total	**15**	**100**	**15**	**100.0**	**70**	**100.0**

The results from Table 4.2 indicate that a fairly large percentage of headteachers (73.4%), deputy headteachers (53.3%) and HoDs (37.1%) are between 46-55 years of age. The distribution can be due to the fact that one must have worked for several years before being promoted as per the Teachers Service Commission (TSC) number of years of service as it determines experience and increases chances of being promoted. This indicates that the potential of enhancing ICT literacy which influences ICT integration positively is minimal as majority of the administrators are above 45 years and this would affect their attitudes towards ICT.

4.3.3 Headteachers' academic qualifications

Headteachers' academic qualifications would also influence ICT integration in school management. Information and Communication Technology integration in school management calls for a trained headteacher who would be on the forefront to design and support his/her staff members in the process of integration. Makhanu (2010) noted that education level correlates positively with ICT literacy which is key to ICT integration in management. The headteachers' academic qualifications are shown in Table 4.3.

Table 4.3

Headteachers' academic qualifications

Qualifications	Headteachers	%
M.Ed degree	4	26.7
M.A degree	5	33.3
B.Ed degree	4	26.7
B.A/B.SC with PGDE	2	13.3
Total	**15**	**100.0**

Table 4.3 shows that a fair percentage of headteachers' (33.3%) were M.A degree holders and (26.7%) M. Ed and B. Ed degree holders. As per the results obtained, secondary school headteachers of Kamukunji and Starehe are a suitable target group for ICT integration in education.

4.4 Extent to which ICT had been integrated in school management

Extent to which ICT had been integrated in school management was also analysed.

4.4.1 Headteachers, deputy headteachers and HoDs level of computer literacy

Headteachers, deputy head teachers and HoDs were asked to indicate if they had any knowledge or training in computer or ICT. As school managers they were supposed to spearhead the school staff with computer skills in this era of ICT. Computer skills in school management are a critical component which could

determine the quality of education in the school. Their responses were as shown in Table 4.4

Table 4.4

Headteachers, deputy headteachers and HoDs level of computer literacy

Response	Headteacher	%	Deputy headteachers	%	HoDs	%
Yes	9	60.0	8	53.3	17	24.3
No	6	40.0	7	46.7	53	75.7
Total	**15**	**100.0**	**15**	**100.0**	**70**	**100.0**

Results from Table 4.4 indicate that a fairly good percentage of headteachers (60.0%) and deputy headteachers (53.3%) had computer skills, whereas majority (75.7%) of the HoDs had no computer skills. Although majority of headteachers indicated that they were computer literate, it was noted that they could not use some of the administrative applications. This slowed down ICT integration in management. It is therefore important that training in ICT should be relevant to management.

4.4.2 Deputy headteachers' and HoDs in-service training in ICT

In-service programmes for deputy headteachers and HoDs' are significant issue in the integration of ICT in school management. Training in the use of computers needs to be considered for effectiveness in management to realize quality

education. In-service training in computer is key because most of the school administrators received their education at a time when computers were not yet incorporated into the educational arena and they may have limited experience with technology. Data collected was as tabulated in Table 4.5 below.

Table 4.5

Deputy headteachers and HoDs' in- service training in ICT.

Response	Deputy headteacher	%	HoDs	%
Yes	9	60.0	21	30.0
No	6	40.0	49	70.0
Total	**15**	**100.0**	**70**	**100.0**

4.4.3. Sponsoring agency for deputy headteachers and HoDs ICT training

Another factor that this study sought to find out was sponsorship of teachers to undergo ICT in-service programs. This was a very significant issue in the integration of ICT in education. Training in the use of computers needed to be considered for effectiveness of using computers in school management. Deputy headteachers and HoDs were therefore required to give their responses on who sponsored them to undergo in-service in ICT. Table 4.6 gives the results of the data findings.

Table 4.6

Sponsoring agency for deputy headteachers and HoDs ICT training

Sponsor	Deputy headteachers'	%	HODs	%
SMASSE	3	20.0	10	**14.3**
MoE	8	53.3	14	**20.0**
NGO	1	6.7	4	**5.7**
School	3	20.0	42	**60.0**
Total	**15**	**100.0**	**70**	**100.0**

Table 4.6 indicates that a fairly good percentage (60.0%) of the HoDs was sponsored by their respective schools. Twenty percent (20.0%) of the deputy headteachers also indicated that schools and SMASSE sponsored them for training. However a fairly good percentage (53.3%) of the deputy headteachers and a slightly low percentage (20.0%) of HoDs were sponsored by the MoE. This shows disparity in sponsorship by MoE between the deputy headteachers and HoDs since the deputy headteachers are given priority to attend in-service training at KEMI. For ICT integration in management more teachers need to be sponsored for ICT training.

4.5 Teachers' ICT training and its integration in education management

Training of teachers in ICT would make them computer literate due to exposure to the basics of email, search engines, website design and the integration of technology in classroom and management. There was need therefore for the study

to determine how training of teachers in the use of computers and other ICT materials would influence school management. Pelgrum and Plomp (1993) found out that there was a relationship between what was learnt in ICT during training and the extent of use of ICT for instructional and administrative purposes. The researcher therefore aimed at finding more information from deputy headteachers and HoDs on training based on the following aspects.

4.5.1 Deputy headteachers and HoDs' perceived needs on ICT training

Teachers were required to indicate their perceived needs on ICT training and the results were tabulated as shown on Table 4.9. Deputy headteachers and HoDs were to strongly agree, agree, disagree or strongly disagree.

Table 4.7

Deputy headteachers and HoDs perceived need on ICT training

Statement	Perceived need	Deputy headteacher	%	HoDs	%
Every teacher must be trained In the utilization of ICT	SA	15	100.0	70	100.0
	A	0	0.0	0	0.0
	NS	0	0.0	0	0.0
	D	0	0.0	0	0.0
	SD	0	0.0	0	0.0
Every teacher who regularly Uses computers must be trained in ICT integration in management	SA	4	26.7	30	42.9
	A	4	26.7	20	28.6
	NS	3	20.0	10	14.3
	D	1	6.6	5	7.1
	SD	3	20.0	5	7.1

Results from Table 4.7 indicate that 100.0% of deputy headteachers and HoDs strongly agreed that every teacher must be trained in the utilization of ICT. Besides there was a variation in indicating whether teachers who were regularly using computers must be trained on how to integrate ICT in management. There was 26.7% of deputy headteachers' and 42.9% of HoDs' who strongly agreed. However there was 20.0% of deputy headteachers and 7.1% of HoDs' who strongly disagreed. Those who already had acquired computer knowledge could easily integrate it in school management.

4.5.2 Perception of deputy headteachers and HoDs on ICT in education

Both deputy headteachers' and HoDs' were asked to respond to statements for measuring their perception towards ICT use in education. The findings were then tabulated as shown in Table 4.8 below.

Table 4.8

Deputy Headteachers and HoDs Perception to ICT Integration

Statement	Response	Deputy headteacher	%	HoDs	%
Learning how to use ICT is enjoyable	SA	8	53.3	41	58.6
	A	7	46.7	29	41.4
	NS	0	0.0	0	0.0
	D	0	0.0	0	0.0
	SD	0	0.0	0	0.0
Use of comp. is important in management	SA	15	100.0	45	64.3
	A	0	0.0	25	35.7
	NS	0	0.0	0	0.0
	D	0	0.0	0	0.0
	SD	0	0.0	0	0.0
Doing office work using comp. is preferred	SA	8	53.3	30	42.9
	A	7	46.7	40	57.1
	NS	0	0.0	0	0.0
	D	0	0.0	0	0.0
	SD	0	0.0	0	0.0
Spending extra time browsing the internet is enjoyable	SA	0	0.0	0	0.0
	A	0	0.0	0	0.0
	NS	0	0.0	0	0.0
	D	7	46.7	40	57.1
	SD	8	53.3	30	42.9

The results from Table 4.8 show that a fairly good percentage 53.3% and 58.6% of deputy headteachers' and HoDs respectively perceived that the use of ICT is something enjoyable. In addition, 100.0% deputy headteachers and 64.3% HoDs felt that the use of computer in management is important. However on the issue of

spending extra time browsing the internet was something that both deputy headteachers (53.3%) and HoDs (52.1%) perceived not to be good in while focusing on ICT integration in school management. This indicates that perception is important in ICT integration in management.

4.6 Headteachers' Perceptions of ICT integration in management

Users' perceptions influence to a great extent the rate and level of technology adoption. According to Van- Akkeren and Cavaye (1999) as quoted by Nchunge, Sakwa and Mwangi (2012) the perceived usefulness and perceived ease of use influence the perception of the users while the perceptions predict attitudes toward technology adoption. Then the attitude develops the intentions to use and intentions cause actual system usage. These influence the users' decision regarding how and when they will use it (Davis, Foxall and Pallister, 2002). This study therefore sought to establish the extent to which the headteachers' perceptions towards ICT influence its integration in school management. The findings were tabulated in Table 4.9 below.

Table 4.9

Headteachers perception towards ICT integration in management

Statement	Response	%
ICT use in management is not too complex	SA	6.7
	A	20.0
	NS	0.0
	D	26.7
	SD	46.6
Manual mode of management preferred to electronic mode	SA	40.0
	A	20.0
	NS	6.7
	D	13.3
	SD	20.0
ICT aided programmes are not sustainable	SA	40.0
	A	26.7
	NS	0.0
	D	20.0
	SD	13.3
ICT reduces teacher to student physical touch	SA	33.3
	A	20.0
	NS	6.7
	D	26.7
	SD	13.3
ICT requires teachers to be retrained which wastes class time	SA	20.0
	A	13.3
	NS	0.0
	D	20.0
	SD	46.7

The results in Table 4.9 indicate that the general perception of the headteachers' was negative. Most of the headteachers gave positive responses to negative statements and vice versa. For instance, only 6.7% of headteachers' strongly agreed that ICT in management is not too complex, which is a positive statement. Whereas a fairly good percentage of headteachers' (40.0%) had the perception that manual mode of management is good compared to electronic mode. Another (40.0%) of headteachers' stated that ICT aided programmes are not sustainable. Nevertheless, 33.3% of headteachers' also indicated that ICT reduces teacher to student physical touch. Others (20.0%) said that ICT requires teachers to be retrained and it wastes too much class time. Majority therefore were of the view that teachers need retraining and did not support that it wastes time.

The sediments expressed by majority of the respondents pointed out that; headteachers perceptions significantly influenced ICT integration in management. The findings indicate that ICT use in management is perceived complex, the complexity attitude according to Davis (1998) leads to behavioural intention to use technology and actual usage. This implies that there is inadequate human capacity for ICT integration in schools, leading to low or absence of ICT use in management activities. Complexity in usage will not only slow technology acceptance rate, but will also delay the actual benefits of ICT integration in schools. These can be attributed to inadequate technical readiness as noted during the study. Technical personnel to help the managers to use ICT were not available

and they relied on the computer teacher who had his own teaching load as noted during the study. This agrees with Westrup (2003) as quoted by Nchunge, Sakwa, and Mwangi, (2012) that public schools and institutions in developing countries are increasingly facing difficulty of managing and using ICTs.

It was further found out that principals viewed ICT programmes as unsustainable as indicated by 40 % who strongly agreed that ICT aided programmes are not sustainable and 26.7 % who agreed this implies that intangible and un- observable support of ICT integration in secondary schools has influenced its diffusion rate. Despite ICT relative advantage, its implementation in secondary schools is merely on trial as principals wait to observe trends as they unfold due to perceived fear of lack of support. Principals preferred electronic mode of management as opposed to manual mode of management showing positive perception. Although this is not being maximized, they are willing to embrace technology.

The study found out that principals had the perception that, ICT reduces teacher to student physical touch. This is an indicator of unawareness of the integral potential that technologies have to offer in educational institutions. Nchunge, Sakwa and Mwangi (2012) concur and indicated that this shows inadequacy in psychological and technical preparedness which hampers ICT integration, causing a haul that may lead to a wider digital divide among schools and between developed and developing economies.

Principals had a positive perception on re-training of teachers in ICT. Mass training and retraining of teachers on ICT usage in educational activities would prepare them materially, psychologically and enhance their technical skill readiness. Absence of planned literacy courses for teachers has given them a leeway on when and how to acquire the requisite skills. According to Nchunge, Sakwa and Mwangi (2012), the refresher courses for teachers in secondary schools on ICT application and usage are limited, irregular and unclear.

4.7 Access to ICT infrastructure and its influence on integration

In KESSP; the section on ICT for educational investment programmes put a clear emphasis on developing infrastructure and capacity in particular human resource, in order to develop the skills which will be needed tomorrow. Empirical information, however, indicates that key problem in ICT use is poor ICT resources provision, internet connection which is either unavailable or unreliable and teachers lacking basic ICT skills. The purpose of this study therefore was to find out if some of these factors noted hindered ICT integration in school management.

4.7.1 Location of computers in schools

Location of computers in schools is important as it influences access of the computers by the teachers. According to Menjo and Boit (2010) in their study, "The challenges of using Information and Communication Technology (ICT) in

school administration in Kenya", they found that teachers find it convenient to use the computer for administrative work if it is located in a room where they do most of their work such as the staffroom than if it is in the headteachers office. This study sought to find out the location of computers by asking the headteachers to indicate location of computers in their schools. All the headteachers indicated that computers were located in the computer laboratory, however some of the rooms where the computers were kept as observed during the study were not computer laboratories but stores. Apart from the computer laboratories, other computers were located in the teachers' lounge, library and administrators office. Data collected was tabulated in Table 4.10.

Table 4.10:

Location of computers in schools

Location	**Headteachers'**	**%**
Teachers lounge	3	20.0
Library	2	13.3
Classroom	0	0.0
Administrators office	10	66.7
Total	**15**	**100.0**

The results indicate that only 20% of the computers were readily accessible to the teachers as they were located in the teachers' lounge. Another 13.3% were located in the library while 66.7% were in the headteachers office. These areas are not

easily accessible as the library and computer laboratories are opened at particular times by the person incharge. Teachers may not be comfortable to sit in the administrator's office to do their work. This agrees with the study carried out by Menjo and Boit (2010) which indicated that computers kept in the library and computer laboratories which are opened at certain times by those incharge means teachers could not use computers whenever they wanted. The researcher went further to seek the view of the headteacher on teachers' access to computers.

4.7.2 Headteachers' response on percentage of teachers accessing computers

Accessibility to the ICT infrastructure is key to its integration in management. The headteachers' were to indicate the total percentage of teachers who had access to computers in their schools and data was recorded as shown in Table 4.11

Table 4.11:

Teachers with access to computers

% of teachers	Headteachers'	%
25%	5	33.3
50%	2	13.3
75% and above	8	53.4
Total	**15**	**100.0**

The results in Table 4.11 show that quite a good percentage of (53.4%) of the headteachers indicate that more than 75% of teachers had access to computers. However, another slightly fair percentage (33.3%) of the headteachers' indicated that only 25% of teachers could access computers in their schools. From the headteachers responses it shows that he was not sensitive to the location of the computers and their accessibility to the teachers. As earlier indicated when computers are in the computer laboratory and administrator's office, the teachers cannot access them whenever they wanted. SAIDE, 2003 also noted that African teachers complain that where their schools have computer rooms, their access are restricted which is inconvenient. This prompted the researcher to go on and find out where else could the teachers be accessing computers if not school.

4.7.3 Deputy Headteachers' and HoDs' alternative sites of accessing computers

Alternative sites for computer access are important as they may be prohibitive to ICT integration in management due to distance and cost. Teachers were asked to indicate where else they access computers and findings were tabulated in Table 4.12.

Table 4.12

Deputy headteachers and HoDs alternative sites of accessing computers

Alternative site	Deputy Headteachers'	%	HoDs	%
Personal computers.	6	40.0	20	28.6
Cyber café	7	46.7	35	50.0
None	2	13.3	15	21.4
Total	**15**	**100.0**	**70**	**100.0**

From the table, a fairly good percentage of deputy headteachers' (46.7%) and HoDs (50.0%) indicated that they go to the cyber café. Whereas, other deputy headteachers' (13.3%) and HoDs (21.4%) neither did they go to the cyber café nor had personal computers on one hand, those who went to the cyber café gave a reason that they didn't own personal computers and didn't have basic computer skills. This is costly to the teachers and they may not use their finances to do school management work. This would slow down ICT integration in schools. But still, the researcher went on to find out what made teachers visit cyber cafés. The question was that did the schools have internet connectivity in deputy headteachers and HoDs offices?

4.7.4 Internet connectivity in deputy headteachers and HoDs' offices

Internet connectivity is very important as it enhances communication through e-mail, enhances internet research which can improve curriculum delivery. Deputy

headteachers and HoDs were asked to respond on the issue of internet connectivity. They were to state if their offices had or did not have internet. The responses were then tabulated as shown in Table 4.13.

Table 4.13:

Internet connectivity

Response	Deputy Headteachers'	%	HoDs	%
Yes	5	33.3	20	28.6
No	10	66.7	50	71.4
Total	**15**	**100.0**	**70**	**100.0**

From the results in the table, a fairly large percentage of deputy headteachers (66.7%) and (71. 4%) of HoDs indicated that their computers had no internet. Very few deputy headteachers' (33.3%) and HoDs (28.6%) indicated that their computers had internet. With majority of the respondents indicating lack of internet, this shows that internet is a major hurdle in ICT integration in secondary school management. But still, if the internet was available, who pays for it?

4.7.5 Payment for the internet in secondary schools

The headteachers' were asked to respond to this question, who pays for the internet? Results obtained were tabulated in Table 4.14 below.

Table 4.14

Internet payment

Paying agency	Headteachers'	%
The government	6	40.0
Parents Teachers Association (PTA)	9	60.0
Total	**15**	**100.0**

Results from Table 4.14 indicate that it is the PTA (60.0%) that carries the heavy burden of paying the internet connectivity in schools. The government only pays 40.0%. From the results obtained it is evident that internet connectivity influences ICT integration in school management negatively. During the study it was observed that schools were at different economic status. Big schools have more resources to pay for internet connectivity while the priorities in small schools are for basic infrastructure. This is supported by the headteachers' as they indicated financial bottlenecks as a serious challenge.

4.7.6 Availability of computer software in schools

Availability of software in schools would determine the extent of ICT use in schools. Nchunge, Sakwa and Mwangi, (2012) noted that lack of appropriate administrative software hindered ICT adoption in school management. Therefore it was important to establish the software available in schools by asking the

headteachers' to indicate the availability of various computer softwares in their schools and findings tabulated in Table 4.15.

Table 4.15

Availability of softwares

Software	Response	Headteachers	%
Word processing	Yes	10	66.7
	No	5	33.3
Spreadsheets	Yes	9	60.0
	No	6	40.0
Publishing	Yes	1	6.7
software	No	14	93.3
Data bases	Yes	2	13.3
	No	13	86.7
Power point	Yes	12	80.0
	No	3	20.0
Timetabling	Yes	5	33.3
	No	10	66.7

From Table 4.15, the results indicate that most schools (66.7%) had word processing, 60.0% had spreadsheets, and 80.0% had power point. Very few

(33.3%) did not have word processing and timetabling software; and 13.3% had data bases software .Many schools 93.3% had no publishing software. This indicated that the headteachers knew what softwares were.

4.7.7 Deputy headteachers' and HoDs' use of computers

To get more information ICT integration in schools, deputy headteachers' and HoDs were to indicate if they used the computers in their everyday management work .The findings were then tabulated in Table 4.16.

Table 4.16

Deputy headteachers and HoDs use of computers in management

Response	Deputy headteachers	%	HoDs	%
Yes	5	33.3	12	17.1
No	10	67.7	58	82.9
Total	**15**	**100.0**	**70**	**100.0**

The results from Table 4.16 indicate that a fairly good percentage (67.7%) of deputy headteachers and (82.9%) of HoDs did not use computers in their daily management. Just a few (33.3%) of deputy headteachers and (17.1%) of HoDs daily used computers in management. This indicates under utilization of ICT facilities in schools. This could be attributed to inadequate training of teachers.

The researcher sought more information from the respondents to know how many hours they spent on computers doing management work.

4.7.8 Time spent by deputy headteachers' and HoDs doing management work using computers

Time spent on computers daily doing management work could indicate how efficient or competent these deputy headteacher and HoDS are and also indicate the level of ICT integration. The findings were tabulated in Table 4.17 below.

Table 4.17

Time spent by the deputy headteachers' and HoDs on computers

Time in a week hours	Deputy Headteachers	%	HoDs	%
1-5	5	33.3	38	54.2
6-10	8	53.3	28	40.0
11-15	1	6.7	2	2.9
16-20	1	6.7	2	2.9
Total	**15**	**100.0**	**70**	**100.0**

Results in Table 4.17, show that a fairly good percentage (53.3%) of deputy headteachers and (54.2%) of HoDs spent 6-10 hours and 1-5 hours in a week on computers respectively. A few (6.7%) of deputy headteachers' and (2.9%) of HoDs spent between 11-20 hours on computers. These results show little time is

used in utilizing ICTs. The deputy headteachers and HoDs do not appreciate the benefits of ICTs in management.

4.7.9 Use of computers

Headteachers were asked to respond on the question of computers usage in schools. They were to indicate the uses of computers in their schools and the responses were tabulated in Table 4.18.

Table 4.18

Headteachers' response on computers use

Computer use	Headteachers'	%
Preparation of time tables	10	66.7
Budget preparation	11	73.3
Management of admission records	6	40.0
Analysis of examination	15	100.0
Typing of exams	15	100.0
Teaching	5	33.3
Keeping employee records	9	60.0
Internet research	6	40.0

From the table, majority (100.0%) of headteachers' stated that teachers use computers for management for analysis of examinations and typing of examination. Very few headteachers stated that teachers use computers for teaching (33.3%) and internet research (40.0%). The findings in this section agree with the study carried by Digital links on behalf of MoEST that indicates

inadequate number and capacity of computers as well as lack of internet connectivity in schools.

4.8 School ICT policy and how it influences integration

Educational institutions are required to develop an ICT strategy that incorporates the goals of the institution and how this would be met using ICTs, provide a supporting framework for the development of ICT in the school, and outline how the full potential of ICT is to be exploited to support all aspects. According to Temba (2011) noted that Information and Communication Technology (ICT) policy gives the vision and mission of the organization regarding ICT and offers guidelines to stakeholders on their roles and responsibilities and sets standards and rules of engagement for all ICT players. This study sought to find out if school managers have adopted an ICT policy in the school. The headteachers were required to respond on the question of whether the school has an ICT policy and data was recorded in Table 4.19 below.

Table 4.19

ICT Policy in School

Response	Headteachers	%
Yes	4	26.7
No	11	73.3
Total	**15**	**100.0**

From the table, very few schools (26.7%) had an ICT policy. Lack of ICT policy in schools slows down its integration in school management. This agrees with the findings of Menjo and Boit (2010) who noted that lack of ICT policy at school levels led to slow use of ICT in management. It is therefore important for schools to develop ICT policy in order to exploit the full potential of ICTs in school management

4.8.1 ICT development plan

The study also sought to find out whether the schools had an ICT development plan and results were tabulated. Head teachers were to give their responses.

Table 4.20

ICT development plan

Responses	Headteachers	%
Yes	13	86.7
No	2	13.3
Total	**15**	**100.0**

The findings in table 4.20 indicate that 86.7% of the headteachers' stated that schools had ICT development plans. This could be due to government's emphasis on ICT integration in all sectors and the requirement of a strategic plan which would not be complete without ICT development plan. What could slow it down,

however, was the issue of school ICT policy. With the guidance of the MoE ICT policy, schools should be able to draft the ICT policies.

4.9 Challenges facing the integration of ICTs in management

For any given integration to be successful there has to be some challenges for managers. These would act as drawbacks for ICT integration. Integration of ICTs in management calls for all groups of stakeholders in decision making process to be involved, in order to overcome these challenges. This study sought to find out challenges that headteachers' face in the process of ICT integration in management and the findings were tabulated in table 4.21. Headteachers' were to rank the challenges stated by indicating using: Extremely Serious (ES) Very Serious (VS) Serious (S) Fairly Serious (FS) and Not Serious (NS).

Table 4.21

Headteachers' response on potential ICT challenges

Potential challenge statements	ES	VS	S	FS	NS
Lack of technical knowhow of teachers	13.3%		60%	20%	6.7%
Unreliable electricity			20%		80%
Resistance by teachers		13.3%		26.7%	60%
Poor infrastructure by Internet Service Providers (ISPs)		26.7%	46%		26.7%
Lack of support from school board			13.3%	20%	66.7%
Financial bottlenecks	53.3%				46.7%

The findings in Table 4.21 indicate that the potential ICT challenges that were rated to be major challenges were: lack of technical knowhow (13.3%) and financial bottlenecks (53.3%) were rated as extremely serious while 60% rated lack of technical knowhow as serious. Others that were rated very serious were: resistance by teachers (13.3%) and poor infrastructure by ISPs (26.7%). These results indicate that there are a number of challenges that slow down ICT integration and if the gains of ICT are to be realized these need to be addressed. These results agree with Menjo and Boit (2010) who noted that unreliable internet, lack of ICT skills influenced ICT integration in management.

4.10 Respondents' suggested possible measures to improve ICT integration

Another issue that the study sought to identify was possible measures to improve ICT integration in school management. Deputy headteachers and HoDs were asked on how to improve ICT integration in management and the findings were as shown in Table 4.22.

Table 4.22

Suggested possible measures to improve ICT integration

Suggestion	Deputy headteachers'	%	HoDs	%
Building comp. laboratories	2	13.3	10	14.3
Teachers in-service courses on ICT	10	66.7	30	42.9
Need for reliable electricity	1	6.7	5	7.1
Government sponsorship	2	13.3	25	35.7
Total	**15**	**100.0**	**70**	**100.0**

From Table 4.22, the results indicate that most deputy headteacher (66.7%) and HoDs (42.9%) recommended for teacher in-service courses on ICT integration. This is an important aspect because if teachers were allowed to go for in-service courses on ICT, they would be comfortable to apply the skills in school management. This agrees with Sessional Paper No.1 of 2005 which states that the government appreciates and recognizes that "an ICT literacy work force is the foundation on which Kenya can acquire the status of a knowledge based economy" (GoK, 2005). Education is seen as the natural platform for equipping the nation with ICT skills.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a brief summary of the study, findings, conclusions, recommendations and suggestions for further research.

5.2 Summary of the study

The main purpose of the study was to investigate the institutional and head teacher factors influencing integration of ICT in secondary schools management. The study focused on the objectives by targeting the HoDs, deputy headteachers' and headteachers demographic data. In addition the study focused on ICT issues concerning the secondary school management. To achieve this, the research objectives were formulated on the institutional and headteachers' factors influencing integration of ICT in secondary school management in Kamukunji and Starehe districts, Kenya. Thereafter, research questions were postulated.

To generate and refine the study ideas, the literature review was essential. The variables of the study were summarized in the conceptual framework so as their relationship to one another could be shown clearly.

The study adopted descriptive survey design and both probability and non-probability sampling methods to select HoDs, deputy headteachers and headteachers who would participate in answering questionnaires. The target population was 18 schools and therefore 18 headteachers, 18 deputy heads and 130 heads of departments. However to get an appropriate number of the teachers in each school who would participate in answering questionnaires, sample size was found by using simple random sampling based on the number of departments in the school.

Data was collected using HoDs', deputy headteachers and headteachers questionnaire and analyzed using descriptive statistics, particularly frequencies and percentages. Statistical Package for Social Sciences (SPSS) was used for effective analysis of data. Finally, findings were presented and conclusions drawn.

5.3 Summary of the study findings

The following is a summary of the findings of the study that were guided by five objectives and five related research questions. Objectives of the study were:

1. Establish the extent to which the headteachers' perceptions towards ICT influence its integration in secondary school management.
2. To determine how training of teachers in ICT influences its integration in secondary school management.

3. To determine how access to ICT infrastructure influences its integration in secondary school management.

4. To identify to what extent school ICT policy influences its integration in secondary school management.

5. To establish the extent to which head teachers' experience in ICT influences its integration in school management.

The study was based on Technology Adoption Model (TAM) which is an information systems theory that models how users come to accept and use technology. It provided a basis for determining ICT perception and factors affecting its usage in school management in Starehe and Kamukunji. The respondents were HoDs, headteacher' and deputy headteacher who were selected from a sample of 18 schools, out of these 18 schools, 15 (83.3%) participated in the study and data collected using questionnaires. Therefore the major findings of the study were presented based on the study objectives:

Headteachers' perceptions towards ICT

The study was to establish the extent to which headteachers' perceptions towards ICT influence its integration in school management. A fairly good percentage (60.0%) of headteachers' was computer literate, implying that they perceived ICT integration positively. The study also revealed that other headteacher' (60.0%) encouraged in-service courses in ICT by sponsoring

teachers. This is a clear indication that headteachers being stakeholders in ICT integration in school management at least understood what it means by ICT integration. However the MoE was rated poor by HoDs in terms of providing sponsorship (60.0%). Besides basing on the headteachers' responses in Table 4.11 to indicate perception to ICT integration in school management, the general Perception of the headteachers seemed to be on the side of negativity. For instance, a very low percentage (6.7%) of the head teachers strongly agreed that ICT in management is not too complex; a slightly higher percentage (40.0%) had a perception that manual mode of management is good compared to electronic mode and others (20.0%) had a view that ICT requires teachers to be retrained and this wastes too much time.

Extent to which training of teachers in ICT influence its integration in school management.

It was established that training in ICT has a significant influence in ICT integration in management. Training in ICT would make them exposed to the basics of email, search engines and website for educational research. The findings on the perceived needs on ICT training indicated that all the deputy heads (100.0%) strongly agreed that every teacher must be trained in ICT utilization. This implied that training would have a positive effect on ICT integration in management. Furthermore a fairly good percentage of deputy headteachers (53.3%) and HoDs(58.6%) had a perception that using ICT is enjoyable. The

findings indicated that there was a positive response from teachers, but the only challenge that seemed to limit them was government sponsorship mentioned initially in the first objectives and others covered in the subsequent objective.

Access to ICT infrastructure and its influence to its integration in school management.

Infrastructure for online learning and management is crucial. Access to ICT infrastructure was a major factor to be analyzed and findings recorded for it seemed to have significant influence on ICT integration in management. From the findings a fairly good percentage (66.7%) of the headteachers' indicated that they had computers in the administrator's office. However the study established that most headteachers were making reference to computers used by secretaries. In some schools computer laboratories seemed to be stores where computers were kept and not laboratories. Besides most heads (53.4%) indicated that more than 75% of the teachers had access to computers, but it was established that most of the computer labs remained closed for security purposes. Majority of HoDs (50.0%) and deputy headteachers (46.7%) indicated that they didn't have personal computers and therefore visited cyber cafes to access computers. It was established that most of them accessed cyber cafes because they seemed not to have basic computer skills. Internet connectivity seemed to be a major challenge affecting ICT integration in school management. A good percentage (66.7%) of deputy headteacher and (71.4%) of HoDs indicated that schools were not

connected to internet and if connected the internet was unreliable. Finally, it was also established that 60.0% of the internet financing was by the Parents' Teachers Association (PTA) and therefore, financial bottlenecks (53.3%) was a challenge ranked highly by the headteachers and seemed to be a major factor impending prioritization of ICT integration in school management.

School ICT policy and its influence to ICT integration in school management

Despite the fact that the government of Kenya through the ministry of education has made a commitment to computerize schools so as to integrate ICT in education by developing a number of strategies and also setting ICT policy, it seems many schools had not embraced its use in management. Majority (73%) of headteachers indicated that schools hadn't embraced ICT policy. there seemed to be a challenge in the integration of ICT in management. however some schools (26.7%) had embraced the ICT policy. It was established that school s seemed to be at different levels of ICT integration most probably due to sponsorship and status of the school.

Headteachers' experience in ICT and its influence to ICT integration in management

Empirical data shows that headteachers using computers as a tool for better communication become more involved in the complex worlds of educational leadership. The study established that quite a good percentage (60.0%) of head

teachers had computer skills. Computer skills in school management are a critical component which could determine the quality of education in the school. However the study noted that computer skills is one of the factors but how to apply it in management and also the positive attitude to it to change is another. As school mangers therefore they are supposed to spear head the entire school staff to embrace ICT in management. For instance headteachers who had experience in computer skills and practice them in management stated that they encourage teachers to use computers to prepare timetables (66.7%), preparation of school budgets (73.3%), management of admission records (100.0%) and typing and analysis of exams (100.0%). From the study findings, it is quite clear that administrative tasks are indispensable of ICT skills.

5.4 Conclusion of the study

From the findings of the study several conclusions were arrived at:

(i) It was noted that headteachers perceptions towards ICT affected ICT integration in school management. Majority had negative perceptions towards ICT; however on training they indicated positive perception which means there is hope to enhance ICT integration as they will support the training of teachers.

(ii) Training of headteachers in ICT helped to improve on their perceptions towards ICT. This is due to the fact that training in ICT improves confidence and usage of the various ICT facilities, thereby improving

integration. Having the necessary skills headteachers would encourage teachers to use ICT in management activities. Without proper training even with the available ICT facilities integration would be slow.

(iii) ICT infrastructure such as mobile phones, wireless internet, and availability of relevant software would improve ICT integration. However the problem noted was poor resource provision, internet connectivity and sponsorships. Headteachers perception change would facilitate provision of ICT infrastructure. Access to ICT infrastructure was noted to improve ICT integration in management.

(iv) School Information and Communication Technology (ICT) policy was found to be lacking in most schools and therefore schools lack strategies on which to implement ICT integration. School ICT policy influences ICT integration a great deal. Headteachers who have embraced it incorporate the ICTs in school goals as a supporting framework for quality education in the school.

(v) The headteachers experience in using the computer was found to influence ICT integration. This is because he would encourage the teachers to use ICT in carrying out management work like making the timetable, schemes of work examination analysis.

5.5 Recommendations of the study

Basing on the findings and conclusions already stated, the study recommended the following:

Ministry of Education (MoE) Should:

i. Provide standard management Information System to schools for uniformity and quality in ICT use in schools in order to increase the frequency of use and application.

ii. Encourage Application of ICT by providing the ministry's circulars and other forms of communication to school headteachers through electronic media like CDs.

iii. Set standards for delivering ICT competency and literacy training by organizing for regional training centers for easy access to assist the busy teachers to learn ICT skills. This means the ministry should take lead in setting standards and mechanisms for assessing ICT competency training which will facilitate ICT integration in management.

Headteachers should:

i. Delegate some duties to other teachers to create time for ICT training.

ii. Headteachers should sponsor more teachers for ICT training to increase the ICT skills amongst his teachers.

iii. Encourage application of ICT by ensuring key documents like schemes of work, record of work and exam records are electronically prepared.

Teachers Service Commission (TSC) should:

i. Make it a requirement that ICT literacy is a qualification for one to be a principal.

ii. Provide its services to headteachers by using ICT enabled communication like e-mails, to encourage ICT use by school headteachers.

iii. Motivate ICT literate teachers through promotion or other quantifiable incentives, in order to encourage other teachers to train in ICT.

Kenya Education Institute of Management (KEMI) should:

i. Develop an ICT literacy training curriculum which has contents appropriate for secondary school management.

ii. Offer conferences and seminars to headteachers, deputy headteachers and heads of departments in various courses using ICT like word processing and power point and giving seminar notes on soft copies in flash disks in order to compel them to learn how to use ICT facilities.

5.6 Suggestions for further research.

The following are the suggested areas for further research:

i. The impact of hand held digital devices on school management and administration. This could be researched on because with the growth of ICTs like mobile phones, these could change the status of ICT usage in school management.

ii. The role of the ministry of education (MoE) In ICT integration in school management and administration. This study could tell how the top management perceive, appreciate and support ICT integration in school management and administration.

iii. A similar study should be carried out in schools in a rural set up. to enable those schools that are marginalized understand the importance of ICT integration and make them appreciate that there are other faster and cheaper ways of doing things by use of ICT.

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APPENDICES

APPENDIX I

TRANSMITTAL LETTER

University of Nairobi,

Kikuyu Campus,

P.O Box 92,

Kikuyu.

Dear respondent,

REF: REQUEST TO FILL THE QUESTIONNAIRE FOR RESEARCH PURPOSE.

I am a post graduate student at the University of Nairobi. In partial fulfillment for the award of a Masters degree in Educational Administration, I am required to conduct a research study which focuses on the institutional and headteacher factors influencing ICT integration in secondary school management in Starehe and Kamukunji Districts, Kenya. I request you to kindly fill the attached questionnaire as sincerely as possible. Your identity will be kept confidential.

Thank you,

Yours Sincerely,

Beth Mueni Kitoo.

APPENDIX II

RESEARCH PERMIT

REPUBLIC OF KENYA

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telephone: 254-020-2213471,2241349
254-020-310571,2213123, 2219420
Fax: 254-020-318245,318249
when replying please quote
secretary@ncst.go.ke

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

COUNTY DIRECTOR OF EDUCATION RECEIVED 25 SEP 2012 P.O. Box 74123 NAIROBI

Our Ref: NCST/RCD/13/012/65

Date: 17th September, 2012

Beth Mueni Kitoo
University of Nairobi
P.O. BOX 30197
NAIROBI

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*Institutional and headteacher factors influencing integration of information and communication technology in secondary school management in Kamukunji and Starehe Districts, Kenya*" I am pleased to inform you that you have been authorized to undertake research in **Nairobi Province** for a period ending *30th November, 2012.*

You are advised to report to the Provincial Commissioner and the Provincial Director of Education Officers, Nairobi Province before embarking on the research project.

On completion of the research, you are expected to submit two hard copies and one soft copy in pdf of the research report/thesis to our office.

DR.M.K.RUGUTT, PhD, HSC
DEPUTY COUNCIL SECRETARY

OFFICE OF THE PROVINCIAL COMMISSIONER RECEIVED 25 SEP 2012

Copy to:

The Provincial Commissioner
The Provincial Director of Education Officers
Nairobi Province

"The National Council for Science and Technology is Committed to the Promotion of Science and Technology for National Development"

APPENDIX III

QUESTIONNAIRE FOR HEADS OF DEPARTMENTS

This questionnaire is designed to establish the institutional and headteachers factors influencing ICT integration in secondary school management in Kamukunji and Starehe districts in Kenya. Your identity will be treated with confidentiality. Please respond to all items in the questionnaire with honesty and accurately as possible.

Instructions

Please tick (√) in the bracket in front of the most appropriate responses and use the space provided for explanation where necessary.

Section A: Demographic information

1. Indicate your sex: Male [ ] female [ ]
2. Indicate your age bracket : 26 – 35 years [ ] 36 – 45 years [ ]
   46 – 55 years [ ] 56 years and above [ ]
3. For how long have you been teaching in this institution?
   Less than 1 year [ ] 1- 5 years [ ]
   6 - 10 years [ ] 11 - 20 years [ ]
   21 years or more [ ]

Section B: Perception of HoDs' towards the use of ICT in education

Indicate your answer to the statements below by ticking (√) appropriately using the following phrases: Strongly agree (SA) Agree (A) Not sure (NS)

Disagree (D) Strongly disagree (SD)

No.	Statement	SA	A	NS	D	SD
4	I enjoy learning how to use ICT					
5	I like using computer technology					
6	I prefer doing my work using the ICT					
8	I enjoy spending my extra time browsing the internet					

Section C: Adequacy of ICT resources and related software in your institution

9. Do you have a computer in your office? Yes [ ] No [ ]

If No, where do you access computer facilities?

10. Please indicate whether the following are available in the school.

Internet	Yes [ ]	No [ ]
Word processing	Yes [ ]	No [ ]
Spreadsheets	Yes [ ]	No [ ]
Data bases	Yes [ ]	No [ ]
Presentation Software (Power Point)	Yes [ ]	No [ ]
Publishing Software (for creating newsletters)	Yes [ ]	No [ ]
Timetabling software	Yes [ ]	No [ ]
Mobile phone for the school	Yes [ ]	No [ ]

11. Do you use the computer every day for your management work?

Yes [ ] No [ ]

If yes, how many hours in a week do you use the computer for school related tasks?

1-5	[ ]	21-25	[ ]
6-10	[ ]	26-30	[ ]
11-15	[ ]	31-35	[ ]
16-20	[ ]	36-40	[ ]
40+	[ ]		

Section D: Adequacy of HoDs preparation to use ICT

12. Do you have adequate skills in the use of ICT?

Yes [ ] No [ ]

13. Have you attended any in-services training in the use of ICT?

Yes [ ] No [ ]

14. Who sponsored the in-service training attended?

15. What are the teachers perceived needs on ICT training? Using the rating scale indicate the perceived needs on ICT training

Strongly agree (SA) Agree (A) Not sure (NS)

Disagree (D) strongly disagree (SD)

No.	Statement	SA	A	NS	D	SD
(i)	Taking into account the ongoing introduction of the new technologies in education, every teacher must be trained in the utilization of ICT					
(ii	Even teachers who are regular ICT users must be trained in the integration of ICT in management					

Section E: Other information

Indicate your responses by ticking (√) in the appropriate box

Often (O) Sometimes (SOM) Rare (R) Never (N)

16. How often do you use the computer to carry out the following activities in your school?

No.	**Statement**	**O**	**SOM**	**R**	**N**
(i)	Lesson presentation				
(ii)	Communication to members of your department				
(iii)	Monitor departments textbooks				
(iv)	Preparation of schemes work				
(vi)	Internet research				
(vii)	Teacher evaluation				

17. What challenges do you encounter on the use of ICT in your institution?

18. Give suggestions on how the integration of ICT in secondary school management can be enhanced

APPENDIX IV

QUESTIONNAIRE FOR PRINCIPALS

This questionnaire is designed to establish the institutional and headteachers factors influencing ICT integration in secondary school management in Kamukunji and Starehe districts in Kenya. Your identity will be treated with confidentiality. Please respond to all items in the questionnaire with honesty and accurately as possible.

Section A: Demographic information

Please tick (√) in the bracket in front of the most appropriate response and use the space provided for explanation where necessary.

1. Indicate your sex: Male [ ] Female [ ]
2. Indicate your age bracket :26 – 30 years [ ] 31 – 35 years [ ] 36 – 40 years [ ] 41 – 45 years [ ] 46 – 50 years [ ] 51 – 55 years [ ] 56 – 60 years [ ]
3. Indicate your highest academic qualification

   PhD [ ] M.A. [ ] M. Ed [ ]

   B. Ed [ ] B.A. /B. Sc with PGDE [ ] Dip. Ed [ ]
4. Are you trained on ICT? Yes [ ] No [ ]

Section B: Perception of principals towards the use of ICT in education

Indicate your answer to the statements below by ticking (√) appropriately using the following phrases: Strongly agree (SA) Agree (A) Not sure (NS)

Disagree (D) Strongly disagree (SD)

No.	Statement	SA	A	NS	D	SD
5	ICT use is not too complex					
6	Manual mode of management preferred to electronic mode					
7	ICT reduces teacher to student physical touch					
8	ICT aided programmes are not sustainable					
9	ICT requires teachers to be retrained which wastes class time					

Section C: Status of ICT in the school

9. Where are the computers located in your school?

Teachers' lounge [ ] Library [ ] Computer laboratory [ ]

Classroom [ ] Administrator's office [ ]

10. How long has your school had the computers?

Less than a year [ ] 1-2 years [ ]

2- 4 year [ ] 4-8 years [ ] More than 8 years [ ]

11. What percentage of teachers have access to the school computers?

About 10 % [ ] 50 % [ ] 25 % [ ]75 % [ ]

12. Is there internet in your school? Yes [ ] No [ ]

If yes, who pays for the internet connection in your school?

i. The government budgetary allocation [ ]

ii. Local government [ ]

iii. Parent teacher association [ ]

13. For what purpose does your school use ICT?

i. Preparation of timetables [ ]

ii. Email communication [ ]

iii. Budget preparation (quick books, spreadsheets) [ ]

iv. Monitoring of stores [ ]

v. Management of admission records [ ]

vi. Analysis of exam [ ]

vii. Typing of exams [ ]

viii. Teaching [ ]

ix. Management of student health records [ ]

x. Keeping employee records [ ]

xi. Employee performance tracking [ ]

xii. Tracking library books (losses and numbers) [ ]

xiii. Internet research [ ]

14. Does your school have an ICT development plan?

Yes [ ] No [ ]

15. Does your school have ICT policy? Yes [ ] No [ ]

Section D: Challenges facing the integration of ICTs in management.

16. Please rank the challenges from the most serious to the least serious using the key below by ticking (√) in the appropriate box. Extremely serious (ES) Very serious (VS) Serious (S) Fairly serious (FS) Not serious (NS)

No.	Potential challenge	ES	VS	S	FS	NS
(i)	Lack of technical knowhow of teachers					
(ii)	Unreliable electricity					
(iii)	Resistance by teachers					
(iv)	Poor infrastructure by Internet Service Providers (ISPs)					
(v)	Lack of support from school board					
(vi)	Financial bottlenecks					

17. What factors would enhance the use of ICTs in management in your institution

APPENDIX V

OBSERVATION CHECK LIST OF ICT INFRASTRUCTURE

Items	Comments	Comments	Comments
	No. of computers	In use	Not in use
Principal's office			
Deputy Principal's office			
Heads of Departments offices			
Senior Teacher's Office			
Bursar's office			
Secretaries office			
Computer lab			

	Present	Absent
Availability of printers		
Availability of school mobile phone		
Availability of projectors		
Availability of photocopiers		
Availability of technical personnel to help managers and teachers to use ICT		
Availability of administrative software		

APPENDIX VI

LIST OF SCHOOLS IN KAMUKUNJI AND STAREHE

NO	SCHOOL
1	St. Teresas Boys
2	Moi Forces Academy
3	Eastleigh Boys High School
4	Kamukunji Boys Secondary School
5	Uhuru Secondary School
6	Maina Wanjigi Secondary School
7	Our Lady of Mercy Secondary School, Shauri Moyo
8	C.G.H.U Secondary School
9	Ndururumo Secondary School
10	Pumwani Boys Secondary School
11	Jamhuri Boys Secondary School
12	Parklands Boys Secondary School
13	Pumwani Girls Secondary School
14	Pangani Girls Secondary School
15	St. Teresas Girls Secondary School
16	Ngara Girls Secondary School
17	Starehe Boys High School
18	Murang'a Road Secondary School