FACTORS INFLUENCING INTEGRATION OF INFORMATION COMMUNICATION AND TECHNOLOGY IN STUDENT MANAGEMENT IN PUBLIC SECONDARY SCHOOLS IN MBEERE NORTH DISTRICT, KENYA

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DECLARATION

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

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This project is dedicated to my loving husband John Munyi and my children Doreen Mukami, Hilda Nyakio and Ephy Mwendani.

Thank you and God bless you.

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My prayer is that the good Lord in his riches and glory bless you all abundantly.

ABSTRACT

The purpose of this study was to investigate the factors influencing the integration of ICT in student management in public secondary. Specifically the study sought to achieve the following objectives: To investigate the influence of technical support on the integration of ICT in student management in secondary schools; To assess how availability of funds influence ICT integration in student management in secondary schools; To establish how accessibility to ICT infrastructure influence the integration of ICT in student management in secondary schools and to establish how the implementation of government policy influence the integration of ICT in student management in public secondary schools.

The study employed a descriptive survey design. The target population of this study was the 27 public schools in Kenya. The target respondents were the 27 principals and the 159 teachers and 27 technical staff from the schools. The study utilized stratified sampling technique, from the total population of 213; a sample of 64 representing approximately 30% of the total population was selected. Stratification increases precision without increasing the sample size. Data collection instruments include self administered questionnaires. Analysis started with editing the collected information. Raw data was sorted, checked to establish accuracy, usefulness and completeness. The data was then sorted, coded and arranged serially to make it easy to identify. The coded data was entered in the computer for analysis using the Statistical package for Social Sciences (SPSS) version 17.0 computer software. Quantitative data was analyzed through descriptive statistics using frequencies and percentages. Qualitative data was analyzed by arranging them according to the research questions and objectives. Data was analyzed and recorded using frequency distribution and percentages.

The study showed that majority of the schools in the District relied on ICT grants received by schools through relevant MoE schemes that encouraged schools to install or upgrade their ICT systems. There is inadequacy in the number of technical support services in secondary schools in Mbeere North District and as a result the situation has been severely limiting teachers from using technology in student management. The study also concludes that in Mbeere North District, the schools that have adopted ICT encounter challenges relating to equipment repair since they have to visit the nearest IT Company for repair. This study recommends that the ministry of education should ensure there is no delay of funds meant for ICT implementation in secondary schools in Kenya in order to reduce or cut the dangers associated with reliance of private funding because this schools may be at a disadvantage and as a result contribute to an exacerbation of the digital divide in society. Clearly, the widespread use of private funding suggests that the demand for ICT equipment exceeds what can be met from the public grants provided to date.

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LIST OF ABBREVIATIONS AND ACRONYMS

BOG	Board of Governors
GOK	Government of Kenya
HOD	Head of Department
ICT	Information Communication and Technology
IT	Information Technology
KESSP	Kenya Education Sector Support Programme
KICD	Kenya Institute of Curriculum Development
MOE	Ministry of Education
OECD	Organization for Economic Cooperation and Development
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Education, Scientific and Cultural Organizations
USAID	United States Agency for International Development

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Zaman, Shamim and Clement (2011) show that adopting and using ICT in schools leads to significant expansion of education and pedagogical outcome which are beneficial to both teachers and students. When used appropriately, ICT can help to strengthen the importance of education to increasingly networked society. Public secondary schools in Kenya are facing challenges in integrating ICT in the management of student. ICTs encompass 'all those technologies that enable the handling of information and facilitate different forms of communication among human actors, between human beings and electronic systems, and among electronic systems'. This broad definition includes both 'older' technologies, such as radio, television and telephone, as well as 'newer' technologies, such as mobile technology and computers (Herrington & Kervin, 2007).

One of the most vital parts of any society, education, has integrated ICT into teaching many subjects. There are many benefits of using ICT in education. For example, research has suggested that using ICT in education enables students to take a more active role in their learning rather than be a passive observer or listener (Honan, 2010). ICT is also perceived to have many advantages in education including: pursuing problem-solving skills, fostering collaborative

learning, providing flexible learning opportunities and increasing productivity (Sinclair, 2009). Furthermore, ICT is considered important for improving the effectiveness of teaching and learning in schools (Lim & Khine, 2006).

Consequently, with the potential that it offers, ICT has become an important part of educational reform efforts. Many countries have allocated substantial budgets for ICT implementation in education. Since the late 1990s, many governments have developed strategic plans to increase their investments in ICT in their education systems. In 2011, The Organisation for Economic Cooperation and Development (OECD) found that many governments are making sizeable investments in ICT. For example, the Australian government estimated that about AUD$8 billion was invested in ICT in education in 2008. In 2006, the United States Department of Education reported spending more than USD$9.5 billion for educational technology in public schools. Like Australia and the United States, Saudi Arabia has also made substantial investments in educational technology.

With these considerable investments in ICT for education, it is worthwhile to question the status of the educational integration of ICT in schools. To what extent have the schools integrated ICT effectively into their practices? Does the reality on the ground match the expectations? A review of the literature found that not all studies indicate the positive impact of using ICT. Several found either “no

effect" or a negative impact of ICT on education (Tripp & Herr-Stephenson, 2009).

Across Africa, many countries have started investing considerable amount of money and designing new policies all aimed at making adoption and use of ICT in schools a reality. However, there are many challenges some of whichcould be attributed to the school heads leadership practices (Zaman, Shamim & Clement, 2011). For ICT to be effectively integrated in schools, the administration should be prepared to face challenges that come with its implementation. In Kenya, the government recognizes the positive effect of ICT in making the country a middle level economy which has is envisaged in Kenya vision 2030. Effort to implement ICT in schools was first initiated by publishing sessional paper No.1 of 2005 where ICT was given prominence. The idea was to equip public secondary schools with ICT infrastructure and integrate it in existing school curriculum in order to meet the challenges of information society. The publication stated that in every school; teacher, student and communities around it should participate in acquiring ICT skills desirable to benefit from knowledge-based economy by year 2015. Learning and teaching in schools was to be transformed to embrace ICT skills appropriate for twenty first century (GOK, 2010).

In 2006 the government disseminated National ICT policy on education with a section emphasizing that the government has encouraged adoption and use of ICT

in schools through; 1) promoting affordable ICT infrastructure in schools in order to facilitate acquisition of skills and knowledge through e-learning, 2) creating awareness of opportunities offered by ICT in schools, 3) promoting development of local e-content in order to address the needs of individual schools, 4) promoting enabling environment for integrating e -learning in curriculum to support ICT in schools, 5) promoting integration of ICT resources with other existing school resources, 6) establishing a national ICT centre of excellence where schools can draw parallels, 7) facilitating sharing of ICT resources between schools, 8) promoting public – private partnership in mobilizing resources to support ICT initiatives in schools, 9) promoting and facilitating training of teachers and school managers on ways to adopt and use ICT through in-service courses, and 10) facilitating rural electrification and connecting schools to electricity grid in order to support ICT (GOK, 2006).

Some of achievement so far include; connecting over 300 rural schools with electricity, equipping over 500 public secondary schools with computers, establishing a unit at Kenya Institute of Curriculum Development (K.I.C.D) to provide leadership in implementation of ICT in schools, Launching of e -content for schools in March 2010 by Kenya Institute of Education, partnering with several organizations and private sector in providing computers to schools, among others (Laaria 2013). These efforts reflect the seriousness the government is

attaching to implementation of ICT to schools. Despite its importance and strategies developed by government to implement ICT in schools, research conducted in many schools in the country has established that most of them are not effectively adopting and using ICT to support learning, teaching and management as intended (Manduku, Kosgey, & Sang, 2012). Laaria (2013) revealed that despite efforts made by various stakeholders and importance of the ICT in education sector, the National ICT policy on education of 2006 has not been effectively integrated as was intended. While many counties have reported less than 31% adoption of ICT student personnel management in public secondary schools, the proportion remains considerably low in Kenya.

1.2 Statement of the Problem

Mbeere North Districts like any other district in Kenya have public secondary schools that have inconsistency in the application of ICT facilities in students' management. The fact that public secondary schools are witnessing a tremendous growth in student enrolment has made the management of students complex thereby, creating challenges ranging from the management of student data, affective record keeping, computation of students results, course registration, supervision of students and management of school finance, in agreement with these points, Omondi (2014) argued that there is no time in the history of education in Kenya when schools and administrators have been faced with such

multitudes of challenges than now. The administrators have been faced with such multitudes of challenges. The administrative functions in the public secondary schools are becoming increasingly complex in terms of enrolment, delay in computation of results among others.

Schools in Mbeere North District in Embu County over the last two years have been experiencing challenges in the integration process. A study by Murungi, (2014) revealed that the integration of ICT in secondary schools in Embu county is a multifaceted, complex process that just not involves providing the technology to schools but also involves teachers' competencies, schools readiness, long term financing and curriculum restructuring. In practice, the usual teaching and curricula approaches still remain basically unchanged in many schools, while the technology is typically poorly adopted and underused. In Mbeere North district the problems of integrating ICT programs have risen due to lack of understanding of the most effective approaches of selecting which technologies to use, the most effective ways to integrate technology, and a lack of understanding of what factors may impact the effectiveness of ICT programs (Munde, 2013).

Locally, studies that have been carried on ICT integration include: Simando (2012) did a study on the Use of ICT in Teaching in Secondary Schools in Nairobi County: Malaba (2012) carried out a an analysis of the effect of ICT

integration in high school test performance, Munde (2013) did a study on the roles of information communication technologies in education. The only study that is close to the current study is Njeri (2013) who examined the effect of ICT usage on classroom management. It is in light of this that this study aims at filling the existing knowledge gaps by investigating the factors influencing the integration of ICT in student management in Mbeere District in Embu County.

1.3 Purpose of the Study

The purpose of this study was to investigate the factors influencing the integration of ICT in student management in public secondary.

1.4 Objectives of the Study

Specifically the study sought to achieve the following objectives:

i. To determine the influence of technical support on the integration of ICT in student management in secondary schools.
ii. To determine how availability of funds influence ICT integration in student management in secondary schools.
iii. To establish how accessibility to ICT infrastructure influence the integration of ICT in student management in secondary schools.
iv. To establish how the implementation of government policy influence the integration of ICT in student management in public secondary schools.

1.5 Research Questions

The following research questions guided the researcher in the study:

i. What is the influence of technical support on the integration of ICT in student management in secondary schools?

ii. How does availability of funds influence the integration of ICT in student management in secondary?

iii. How does accessibility to ICT infrastructure influence the integration of ICT in student management in secondary schools?

iv. How does the implementation of government policy influence the integration of ICT in student management in secondary schools?

1.6 Significance of the Study

The findings of this study may provide a process or framework which should assist school managers in making decisions on how to use ICT in schools. The government would use the findings of this study as a base for revising the current ICT policy in order to overcome the challenges hindering the use of ICT in schools in Kenya. Further, findings of the study are expected to open areas for further study by other researchers and academicians, hence benefiting the whole community.

1.7 Limitations

Limitations are conditions beyond the control of the researcher that could restrict the conclusions of the study and the application of other institutions. Being fact that the researcher was not able to control the views of the respondents, this would affect the validity of the responses. Fear of victimization by higher authority in student l management could also limit the responses, though a high level of confidentiality is assured.

1.8 Delimitations of the Study

Delimitations is a process of reducing the study population and areas to be surveyed to a manageable size. The study focused on Mbeere North District because the district has a range of categories from provincial, district boarding to district day secondary schools.

1.9 Basic Assumptions of the Study

The study was based on the following basic assumption:

i. That the respondents for the study cooperated and gave information that would make it easy to achieve the study objectives.

1.10 Definitions of Significant Terms

Government Policy on ICT refers to the declaration of a government political activities, plans and intentions relating to a concrete cause or, at the assumption of office, an entire legislative session.

Technical Support refers to the provision of assistance to users of technology products such as computers, software products or other electronic or mechanical goods.

Availability of **Funds** refers to how means of accessing the capital to finance is accessible and available.

Student management refers to the process of attracting, retaining and developing the personnel necessary for an institution to meet it stated goals.

ICT refers to the term information and communication technology.

ICT Infrastructure refers to a range of technologies that assist in running institutions efficiently. These services are essential to the everyday mechanics of an institution and integral to effective management. These include hardware, software, networking and implementation (Zaman, Shamim & Clement, 2011).

ICT Integration refers to the use of ICT to introduce, reinforce, supplement and extend skills (Pisapia, 1994).

Management refers to principally the task of planning, coordinating, motivating and controlling fee efforts of others towards a specific objective

1.11 Organization of the Study

The study comprised of five chapters: chapter one consist of the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, limitations, delimitations, and assumptions of the study and definition of significant terms. Chapter two covered review of literature related to the study, conceptual framework and the theoretical framework. Other areas included student management concept, funds availability, ict infrastructure accessibility, government policy and chapter summary. Chapter three was on the research methodology which includes the research design, target population, sample size and sampling procedures, research instruments, data collection procedure and data analysis techniques. Chapter four of the study dealt with details on data collection, data organization, analysis and presentation, while chapter five focused on summary of the findings, conclusions and recommendations for further studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the review of literature on the concept of ICT, student management concept, technical support, availability of funds, accessibility to ICT infrastructure, implementation of government policy, summary of literature review, theoretical framework and conceptual framework.

2.2 Concept of ICT

The introduction of information and communication technology (ICT) into mainstream school has been widely accepted and now penetrates and transforms teaching and learning across the curriculum. ICT was assumed to offer a wide spectrum of benefits for the actual teaching and learning process. The term information and communication technology encompasses the range of hardware (desktop and portable computers, projection technology, calculators, data logging and digital recording equipment), software applications (generic software, multimedia resources) and information systems (Intranet, Internet) now available in schools (Tondeur, Van Keer, Van Braak, & Valcke (2008). ICT is not only the backbone of the information society, but is also presented as an important catalyst for inducing educational reforms that change our students into productive knowledge workers. The educational potential of ICT is stressed in a variety of

ways. For instance, Godfrey (2001) stresses the potential of ICT to present rich learning environments, allowing learners to adopt multiple perspectives on complex phenomena, to foster flexible knowledge construction in complex learning domains, and to cater for individual differences.

Pelgrum and Law (2003) stated that effective integration of ICT depends on educational leaders' perception and vision towards ICT and school culture. Similarly, Tondeur, Van Keer, Van Braak, and Valcke (2008) emphasized that successful integration of ICT occurs when a school has a shared vision, develops ICT integration strategies, and its teachers share the values expressed within the school policy and understand their implications. Lim and Khine (2006) indicated in their study of four schools that a shared vision and ICT integration plan provide school educators with an opportunity for communication about how ICT can be used, as well as a place to start, a goal to attain, and a guide along the way.

2.3 Student Management

The educational system in Kenya has been delineated into different levels mainly pre-primary, primary, secondary and tertiary institutions. The increasing development of educational system at all levels brings greater demands on educational administrators and personnel services. Student management aims at the satisfaction of learners needs in the areas of provision of administration,

registration, orientation, accommodation health services, results, and supervision of school programmes. Apart from the normal classroom instruction, this facilitates the attainment of the desired educational objectives Becta (2008) defined Information and communications technology (ICT) as technology that is used to process, store, transmit, communicate, create or exchange information. In order words, ICT is the computing and communication facilities in education. In the context of this paper, ICT refers to technical systems that receive, process and store data. It facilitates student data management. With developments in information technology in the past decades, it is expected that ICT was used for student management to meet the challenges of modern day school management. Application of ICT in student management enhances administrative work, reduce occupational stress and improve student academic performance. It emphasized that the prominent role of ICT was seen in advancing knowledge and skills necessary for effective functioning in the modern world. There is therefore the need to integrate ICT in student l management.

According to Terry (2012), management is a distinct process consisting of planning, organizing, actuating and controlling, performed to determine and accomplish stated objective by the use of human beings and other resources. According to Lundy (1957), management is principally the task of planning,

coordinating, motivating and controlling the efforts of others towards a specific objective.

2.4 Technical Support and Integration of ICT

Technical support plays an important role in ICT integration in secondary schools. Research conducted in different countries indicated that ICT implementation did not receive sufficient administration support (Tezci, 2011). Administrators need sufficient technical support to help in the intergration of ICT. Providing an inadequate number of technical support services in a school severely limits teachers' technology use (Hew & Brush, 2007). According to Becta's report (2004) if there is a lack of technical support available in a school, then it is likely that preventative technical maintenance was not be carried out regularly, resulting in a higher risk of technical breakdowns. Hew and Brush (2007) found that technical barriers (such as waiting for websites to open, failing to connect to the Internet, or printers not printing) prevented the management of student.

Therefore, even when schools are equipped with sufficient ICT resources, if technical support is not immediately available, any technical problems decreased that access until the problems are resolved (Becta, 2004). It seems that there is a relationship between the lack of technical support and student management. To achieve wider impact with ICT in education, administrators should establish

sufficient ICT support services and maintenance contracts in order to guarantee that quality ICT resources for schools are indispensable conditions (Balanskat, et al., 2006). Lim and Khine (2006) suggested that schools should arrange regular appointments with technical assistance to troubleshoot hardware and software problems, test out equipment and install software, and maintain hardware and catalogue software.

Lack of technical education and training is another barrier to the successful implementation of ICTs in classrooms (Al-Oteawi, 2002). For instance, Saudi Arabia's limited access to ICT and training has been a major obstacle in integrating ICT into education (Almohaissin, 2006). A study by Al-Oteawi (2002) found the majority of the participants (62%) had not taken computer or Internet courses. Additionally, 98% of participants stated a need for staff development in the area of information technology in order to improve their skills and knowledge. Al-Oteawi indicated overall that the participants did not have useful knowledge and skills in information technology. To combat the lack of technological knowledge and skills, the study suggests that the Ministry of Education creates comprehensive staff development programs and plans to aid the implementation of technologies into Saudi classrooms.

Similar research has also been conducted by others yielding the same results. Alam, (2011) found that a contributing factor in the low use of technology by science teachers was the lack of information technology training. The research suggested that providing more staff development was to help teachers successfully integrate ICT into their classrooms. Competency with ICT applications is developed through training. In addition, Almaghlouth (2008) found that lack of technical support and organised professional development programs are significant barriers. Professional development programs for teachers that provide encouragement to use ICT and that stress practical classroom use for the technologies are needed.

Al-Oteawi (2002) found a correlation between neutral and negative attitudes toward technology and lack of computer skills and knowledge. Training programs that focus on increasing technical proficiency help increase awareness of how technology can be applied to classroom teaching, thus, changing the attitudes toward the technologies themselves. Similarly, Autio, Sapienza and Almeida (2000) conducted a study to further understand the relationship between computer training and attitudes toward technology in language instruction. Participants who used the technology available in the language labs developed more positive attitudes towards the technology in the classroom. According to Alshumaimeri, training programs are invaluable to the overall process of integrating computers in

the classroom. Programs must be designed that create positive attitudes toward technology by raising skill levels with the technology itself. Improvement in attitudes, however, cannot guarantee teachers would use the language labs for instruction. Alshumaimeri concludes that when participants receive more computer training, the confidence they gain increases the likelihood of using technology in classrooms. Well planned staff development programs are crucial to the successful implementation of computers in classrooms (Alshumaim & Alhassan, 2010).

Cuban, Kirkpatrick and Peck (2001) also found that teachers, especially females, showed less confidence in their computer use. Additionally, they pointed to their responsibilities as mothers and raising children as factors limiting their time to attend e-learning training. Al-Otaibi also noted that there are many other reasons for teachers not attending training courses. Lack of motivation due to insufficient encouragement from their principals and administration also affected the attendance at training courses. To assist teachers to integrate ICT more effectively, school leaders and policymakers should pay more attention and find solutions to recognise teaching loads and provide teachers with sufficient time.

The previous paragraphs have discussed that important external requirements need to be established in order to achieve effective ICT implementation in education. These requirements, the need for infrastructure, policy and planning,

and support and management, are non-teacher-related factors. The factors that are related to teachers are no less important. The literature review shows that teachers have the most influence on the quality of ICT implementation, and consequently, teacher-related factors are most frequently cited as impacting ICT implementation in education (Tezci, 2009).

2.5 Availability of Funds and Integration of ICT

Funding is a factor that is considered very important in implementing ICT in schools. It covers several areas among which are expenditures on teacher training, availability of financial support or economic resources in general (Stensaker, Maassen, Borgan, Oftebro & Karseth, 2007). Another major barrier to ICT integration is the lack of sustainability of initiatives once funding has ended. Most of the projects are pilot projects, demonstration projects or experimental projects initiated neither by African governments nor local communities and therefore their existence is dependant on external financing (Honan, 2010).

ICT courses and projects for teacher education to enhance ICT integration in student l management identified in the School Net such as the Intel Teach to the Future, Connect-ED and EDN, were pilot projects and their continuity after funding was unclear. Funding becomes a vicious cycle unless it is carefully monitored and strategic partnerships can be developed between partners in the

public, non-government and private sectors. The challenge is to ensure that poor quality courses do not become ubiquitous because they are cheap and conversely, and good quality courses do not disappear because they are expensive to maintain. The biggest problem here remains the sustainability of these programmes with regard to their funding as well as the challenge to maintain their standards of content and delivery of those programmes which enjoy continued funding (Keengwe, Onchwari & Wachira, 2008).

Furthermore, many of the organizations working in building teacher ICT capacity in Africa are currently working independently with little pooling of resources or expertise. Many of these organizations have insufficient funds and resources to be exhaustive or to create best-of-breed course materials on their own. Pooling of resources and expertise in this sector would help to get greater leverage from the money that is spent on developing teacher training programmes in ICT (School Net Africa 2004).

In their Imfundo report, Laaria (2013) assert that in the donor community there is evidence of "re-inventing the wheel" when it comes to developing ICT skills software and manuals, and a number of ICT projects on the African continent seem to develop their own ICT training courses with little consideration for what has already been developed. Shortage of government funds to implement ICT

policies still remains a challenge. According to the United Nations Economic Commission for Africa – UNECA report of the year 2013 almost one third of African countries had not developed national ICT policies by 2003. Even where governments have developed policies related to ICT in education, implementation remains a problem. Many African education ministries are desperately short of funds to allocate to existing educational requirements. Thus, although most education ministries view ICT as an important new field for education development, ICT programmes for teachers are low in terms of spending priorities.

2.6 Accessibility to ICT Infrastructure and Integration of ICT

Numerous research studies have indicated that many countries lack adequate hardware, software and network infrastructure. In a study by Korte and Hüsing (2006), the majority of teachers stated that the lack of ICT infrastructure in schools prohibited them from using ICT in managing student personnel. Hew and Brush (2007) conducted a meta-analysis to identify the general barriers affecting student management in schools for educational purposes, both in the United States as well as other countries. The examination of 48 studies revealed that a lack of resources was the most frequent barrier mentioned with a percentage of 40% compared to the other categories that ranged from 23% to two percent. According to Hew and Brush (2007), a lack of resources may include the lack of

availability of technology in a school as well as the lack of access to this technology. Hew and Brush (2007) commented that "without adequate hardware and software, there is little opportunity for teachers to integrate technology into the curriculum, even in cases where technology is abundant; there is no guarantee that teachers have easy access to those resources" (p. 226).

There are a number of barriers associated with inadequate ICT infrastructure. According to a report by Becta (2004), levels of access to ICT are important in determining levels of use of ICT by educators, but it is not guaranteed that a school with low access means that school does not have enough resources; it may be these resources are inappropriately organized in the school. Similarly, in the report by Balanskat, et al. (2006), the authors emphasized that the accessibility of ICT equipments does not necessarily lead to effective integration of ICT. The lack of high quality hardware and suitable educational software are also considered by the majority of educators to be significant barriers to effective ICT integration.

In the case of Saudi Arabia, one of the most common barriers to the use of ICT in Saudi Arabian schools is the availability of resources in classrooms (AI-Sharhan, 1994; Al-Alwani, 2005). As early as 1994, Al-Sharhan found that 87% of teachers chose not to use audio-visual aids because they did not have the equipment support. Fifty-seven percent of the study respondents also indicated that they had

difficulty in getting the equipment, materials and personnel to the right place at the right time. This determined whether or not they utilised the ICT. Obsolete software and hardware make ICT difficult to integrate (Almusalam, 2001). Insufficient equipment, limited internet access and poor classroom environments (Al-Alwani, 2005) continue to pose challenges to integrating technology. In addition, teachers and students, have limited or no access to highly technical equipment such as digital microscopes, digital cameras, computer labs, laptop computers, and scanners making it difficult for ICT to be integrated into education (Almaghlouth, 2008). There is a need to provide teachers with the technology, equipment, and support. Furthermore, resources should be organised in such a way to ensure maximum accessibility for all users (Becta, 2004). Providing access for, and increased availability of technology can promote its integration into student management (Al-Alwani, 2005).

2.7 Government Policy Implementation and Integration of ICT

According to Wozney, Venkatesh and Abrami (2006), the absence of systematic policy and planning strategies can hinder efforts to integrate ICT into their educational practices. Cuban, Kirkpatrick and Peck (2001) stated that the prevailing assumptions guiding policy on new technologies in schools are deeply flawed and in need of re-assessment. There is a need to develop curricular plans and policies to place some structure on the introduction of ICT in schools

(Albirini, 2004). Hew and Brush (2007) reported that ICT integration plans assist in the creation of a school culture towards ICT integration. Balanskat, Blamire and Kefala (2006) indicated that educational policymakers should pay more attention to policies that stimulate school administrators integrate ICT more and more effectively. Balanskat, Blamire and Kefala (2006) suggested that such policies should include schemes for incentivizing, recognizing and rewarding the teachers' use of ICT, for example, making good ICT integration part of career paths.

In the case of Saudi Arabia, calls have been made by schools for clear policies and planning for integrating ICT into education articulating the mission statements, goals and objectives. For instance, Al-Oteawi (2002) found that most teachers and administrators who responded to his study reported that there is no planning for current technology in schools. They added that ICT cannot be effectively integrated without the development of a clear ICT policy and plan to facilitate its integration into education. One administrator commented that "if there is no plan, it is difficult to utilize information technology in school (Al-Oteawi, 2002).

2.8 Summary of Literature Review

Despite the huge investment in professional development training programmes, the purchase of ICT equipment, and the establishment of ICT infrastructure, ICT integration in schools is limited (Buabeng-Andoh, 2012). There are barriers and concerns being faced by most teachers and administrators (in-service and pre-service) during the period of integrating ICT.

In a more complex teaching and learning environment, the benefits of ICT integration in education are highly dependent on school teachers' and staffs' ability to embed ICT. Several studies reported that ICT adoption and integration in schools is limited (Buabeng-Andoh, 2012). One of the most common challenges that can impede the success rate of ICT integration is the readiness of the users to learn using a wide range of ICT (Wright, 2010). Likewise, the commitment and knowledge of school teachers when it comes to the use of ICT in can also affect the success rate of ICT integration (Keengwe, Onchwari, & Wachira, 2008). It is apparent that not all school teachers are knowledgeable when it comes to maximizing the use of ICT (Lisowski, Lisowski, & Nicolia, 2006). Therefore, the availability of technical support and training to school teachers is very important (Yunus, 2007).

2.9 Theoretical Framework

The study is founded on the Rogers' Diffusion of Innovation Theory (Rogers, 2010) which seeks to explain how new ideas or innovations are adopted, and this theory proposes that there are five attributes of an innovation that effect its integration: relative advantage, compatibility, complexity, triability, and observability. Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes. Rogers' theory suggests that innovations that have a clear, unambiguous advantage over the previous approach was more easily adopted and implemented. Current research evidence indicated that if a potential user saw no relative advantage in using the innovation, it would not be adopted (Rogers, 2010).

Compatibility was the degree to which an innovation fit with the existing values, past experiences, and needs of potential adopters. There is strong direct research evidence suggesting that the more compatible the innovation is, the greater the likelihood of adoption (Rogers, 2010). Complexity is the degree to which an innovation is perceived as difficult to understand and use. This theory is relevant to the current study because the integration of ICT in secondary schools in Kenya require investing time, energy and resources, innovations that can be tried before being fully implemented are more readily adopted. And finally, observability is the degree to which the results of an innovation are visible to the adopters. If there

are observable positive outcomes from the implementation of the innovation then the innovation is more adoptable.

2.10 Conceptual Framework

Mugenda (2008) defines conceptual framework as a concise description of the phenomenon under study accompanied by a graphical or visual depiction of the major variables of the study. According to Young (2009), conceptual framework is a diagrammatical representation that shows the relationship between dependent variable and independent variables.

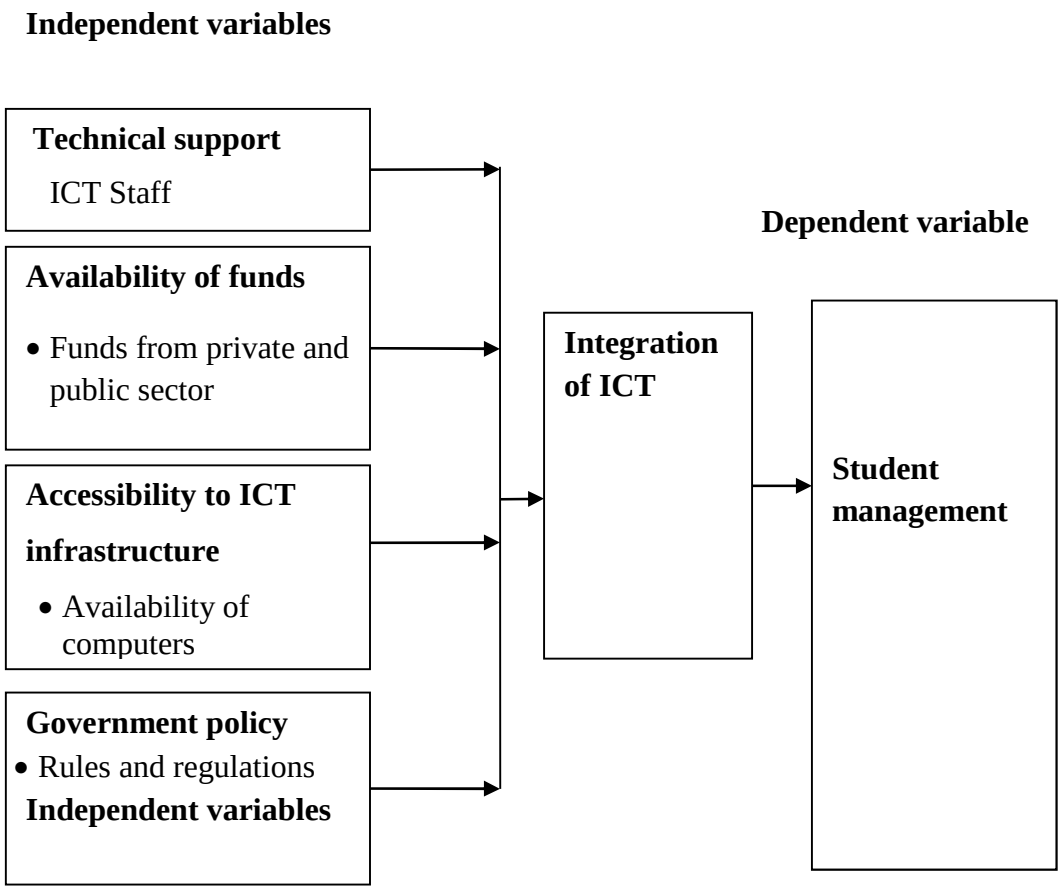

Figure 2.1: Conceptual Framework

In the study, the conceptual framework looked at the relationship between the independent variables (government policy, technical support, availability of funds and accessibility to ICT infrastructure) and the dependent variables (integration of ICT in student management).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the description of the research procedures employed in this study to address the research objectives. It described procedures that were followed in conducting the study. The research procedures were presented in the following subheadings: research design, target population, sample size and sampling procedures, research instruments, data collection procedures and methods used in analyzing the data.

3.2 Research Design

The research design to be used is descriptive survey design. According to Alam (2011) descriptive survey is the collection of qualified data for a population for the purpose of descriptions or to identify variations between variables that may point to causal relationships. The design allows the generalization of findings from a sample to a wider representation of the population.

3.3 Target Population

Target population in statistics is the specific population about which information is desired. According to Alstrup (2000), a population is a well-defined or set of

people, services, elements, and events, group of things or households that are being investigated. The target population of this study was the 27 public schools in Kenya. The target respondents were the 27 principals and the 159 teachers and 27 technical staff from the schools.

3.4 Sample Size and Sampling Procedure

The study utilized stratified sampling technique, from the total population of 213; a sample of 64 representing approximately 30% of the total population was selected. Stratification increases precision without increasing the sample size.

Table 3. 1: Sample Size

Category	Frequency	Percentage	Sample Size
Principals	27	30%	8
Teachers	159	30%	48
Technical Staffs	27	30%	8
Totals	**213**		**64**

3.5 Research Instruments

Data collection instruments include self administered questionnaires. Questionnaires are a fast way of obtaining data as compared to other instruments (Autio, Sapienza, & Almeida, 2000). Questionnaires give the researcher

comprehensive data on a wide range of factors. Both open-ended and closed ended items were used. Questionnaires allow greater uniformity in the way questions are asked, ensuring greater compatibility in responses. The questionnaires was in two parts; part A and part B. Part A comprised of personal data such as teachers details, details on the gender, age and teaching experience; Part B comprised of contextual data with open ended questions which sought information regarding government policy and planning, availability of financial resources, accessibility to ICT infrastructure and integration of ICT and student management. The questionnaire had five scale points namely; strongly agree (5), agree (4), neutral (3), disagree (2), strongly disagree (1). The questionnaires were modified from instruments developed by Mugenda and Mugenda, (2020), with some modification and additions guided by the review of the literature and the researcher's experience with the context of the study.

The interview schedules were used for Principles to guide the interview on the integration of ICT in student management in public secondary schools. The interview guide contained items covering all the four objectives of the study. Research instrument were administered to three schools among 24 teachers and three principles. These schools are from the neighboring district with similar characteristics. Based on the analysis of the pilot study the researcher were able to make corrections, adjustments and additions to the instruments.

3.6 Instrument Validity

Validity is the accuracy and meaningfulness of inferences which are based on the research results. The researcher used content validity, which means the extent to which a measuring instrument provides adequate coverage of the topic under study. (Bourreau & Dogan, 2010). To enhance validity of the questionnaires, expert opinion was sought from lecturers in the Department of Educational Administration on validity of the topic under study and on the legibility of the questions for data collection.

3.7 Instrument Reliability

In order to test the reliability of the instruments, internal consistency techniques was applied using Cronbach's Alpha. The alpha value ranged between 0 and 1 with reliability increasing with the increase in value. Coefficient of 0.6-0.7 is a commonly accepted rule of thumb that indicates acceptable reliability and 0.8 or higher indicated good reliability (Alstrup, 2000).

3.8 Data Collection Procedures

Chong (2010), defines data collection as gathering of information to serve or prove some facts. After the defense and approval of the proposal, the researcher was issued a letter from the University to seek a research permit from the National Council for Science and Technology. After obtaining the permit, the researcher

made preliminary arrangements with the school principals two weeks before the material day, in order to create sufficient rapport with the respondents, raise their confidence and awareness as to the nature and purpose of the study, as well as inform them of their freedom to make informed choice. Data was collected concurrently in all sampled schools using qualitative data collection methods.

3.9 Data Analysis Techniques

Analysis started with editing the collected information. Raw data was sorted, checked to establish accuracy, usefulness and completeness. The data was then sorted, coded and arranged serially to make it easy to identify. The coded data was entered in the computer for analysis using the Statistical package for Social Sciences (SPSS) version 17.0 computer software. Quantitative data was analyzed through descriptive statistics using frequencies and percentages. Qualitative data was analyzed by arranging them according to the research questions and objectives. Data was analyzed and recorded using frequency distribution and percentages as Bourreau and Dogan (2010) argues that most used and understood standard proportions are the percentage. The findings were presented in tables, figures and charts.

3.10 Ethical Considerations

The researcher obtained permission from the authority before going to the field to commence data collection. The researcher avoided doing anything that would have caused physical or emotional harm to the subjects. The researcher ensure personal biases and opinions does not get in the way of the research. The purpose of the research was disclosed to respondents before they are requested to complete the questionnaire. When reporting the results of the study, the researcher ensured that the research report accurately represent what was observed or what was reported by the respondents after proper analysis of all the data collected.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the results and findings obtained from field responses and collected data, broken into two parts. The first section dealt with the response rate, demographic characteristics that included age, period of service, and professional qualification. The second part contains the other five sections present findings of the analysis, based on the objectives of the study where descriptive statistics have been employed. The study objectives were to determine the influence of technical support, availability of funds, accessibility to ICT infrastructure and the implementation of government policy on the integration of ICT in student management in public secondary schools. The frequency on the tables and figures is presented by (F) and percentage by (%)

4.2 Response Rate

Table 4.1 illustrates the study response rate.

Table 4. 1: Response Rate

	Sample	Returned	Percentage
Principals	8	8	100%
Teachers	48	32	66.60%
Technical Staffs	8	8	100%

The statistical information presented is derived from 64 questionnaires distributed to the target respondents. A total of 48 questionnaires were issued, completed and returned giving a response rate of 75%. This corroborates Damanpour (2010) assertion that a response rate greater than 70% is very good. This implies that based on this assertion; the response rate in this case of 75% is very good. The completed questionnaires were submitted to a statistician for data processing and analysis. The questionnaire consisted of the following sections: Biographical information, government policy, technical support, availability of funds, and accessibility to ICT infrastructure

4.3 Demographic Characteristics

The biographical information sought in this section includes variables such as age, current position, period of service, and professional qualifications.

4.3.1 Age of the Respondents

It was important to ascertain the age of respondents in order to obtain a broad indication of their years of experience as shown in Table 4.2.

Table 4. 2: Age Distribution of Respondents

Age	Principals	Teacher	Technical staff	Total
20 – 30	3	9	2	14
	21.4	64.3	14.3	100
31 – 40	3	11	2	16
	18.8	68.8	12.5	100
41 – 50	1	2	3	6
	16.7	33.3	50.0	100
51 – 60	1	9	2	12
	8.3	75	16.7	100
Total	**8**	**31**	**9**	**48**
	16.7	**64.6**	**18.8**	**100**

According to Table 4.2 majority 34 (70.8%) of the teachers, technical staff and principals were above 31 years of age with 14 (29.2%) being 30 years or younger. It is thus evident that most of these teachers and principals were chronologically mature.

4.3.2 Period of Service in Current Position

The teachers, technical staff, principals were requested to indicate the period of service in their current position with the aim of establishing their experience in the integration of ICT in student management. Table 4.3 presents the respondents current position and the period of service at their schools.

Table 4. 3: Respondents' Position and years of service Cross tabulation

	Less than 1 year	**1 - 5 years**	**6 - 10 years**	**Over 10 years**	**Total**
Principals	4	3	0	1	8
	50	37.5	0	12.5	100
Teachers	13	11	2	5	31
	41.9	35.5	6.5	16.1	100
Technical staffs	2	5	2	0	9
	22.2	55.6	22.2	0	100
Total	19	19	4	6	48
	39.6	**39.6**	**8.3**	**12.5**	**100**

According to Table 4.3 there was a great variance in the representation of the different time intervals. The majority 38 (79.2%) of the respondents had less than 5 years of work experience in their current positions in their respective schools.

4.3.3 Professional Qualification

The professional qualifications of principals, teachers and technical staff, were identified, in order to determine their level of understanding of ICT integration. Table 4.4 presents the professional qualifications of the respondents.

Table 4.4: Respondents' Position and Professional Qualification Cross Tabulation

	Diploma	Bachelors	Masters	Total
Principals	0	5	3	8
	0	62.5	37.5	100
Teachers	8	18	5	31
	25.8	58.1	16.1	100
Technical staffs	1	8	0	9
	11.1	88.9	0.0	100
Total	**9**	**31**	**8**	**48**
	18.8	**64.6**	**16.7**	**100**

According to Table 4.4 the respondents' qualifications corresponded to the inclusion criteria stipulated, and did not include any sub-professional care workers.

4.4 Technical Support

This study required the teachers and head of department to indicate their level of agreement based on the statement that technical support and management play an important role in ICT integration.

4.4.1 Teachers Need of Sufficient Technical Support

The teachers were required to indicate their level of agreement based on the statement that teachers need sufficient technical support to help them in using different ICT resources. The findings are shown in Table 4.5.

Table 4. 5: Teachers Need of Sufficient Technical Support

	F	**%**
Strongly Agree	15	32
Agree	29	60
Neutral	2	4
Disagree	0	0
Strongly disagree	2	4
Total	**48**	**100**

Table 4.5 shows that majority of the teachers 60% agreed that teachers need sufficient technical support to help them in using different ICT resources.

According to Tezci (2011), technical support plays an important role in ICT integration in secondary school. Becta (2004) adds that lack of technical support available in a school, results in the likelihood of preventative technical maintenance not being carried out regularly, resulting in a higher risk of technical breakdowns. This study therefore concludes that even when schools are equipped with sufficient ICT resources, if technical support is not immediately available; any technical problems will decrease that access until the problems are resolved. This explains the existence of a relationship between the lack of technical support and teachers' access to ICT equipment at school.

4.4.2 Inadequacy in the Number of Technical Support Services

The principals, technical staff and the teachers were required to give their level of agreement with the statement regarding the adequacy of technical support services. The findings are shown in Table 4.6.

Table 4.6: Inadequacy in the number of technical support services

	F	**%**
Strongly Agree	26	54
Agree	12	25
Neutral	10	20
Total	**48**	**100**

Table 4.6 illustrates that inadequate number of technical support services severely limits teachers' technology use in student management. Lim and Khine (2006) indicate that to achieve wider impact with ICT in education, educational managers should establish sufficient ICT support services and maintenance contracts in order to guarantee that quality ICT resources for schools are indispensable conditions. This study concludes that secondary schools should arrange regular appointments with technical assistance to troubleshoot hardware and software problems, test out equipment and install software, and maintain hardware and catalogue software.

4.4.3 ICT Maintenance, Technical Support, and Obsolescence

One principal stated that the biggest problem encountered is lack of technical support. We have to take equipment to the nearest IT Company for repair. Another principal mentioned that it was difficult to access maintenance in an isolated rural area, and it's hugely expensive. The MoE should provide back-up in each county that we can use. One teacher cited that while all multimedia equipment, laptops and the interactive whiteboard have been supplied by the Digital Hub, there should be financial support for its maintenance. This comment neatly summarizes the fact that for this school the issue was not one of a lack of resources but the lack of an efficient way of maintaining them. One principal wrote: All of the IT equipment in the school is old (pre-1999) and is constantly

giving trouble. We have no technical expertise amongst the staff so maintenance is a problem. Teachers are discouraged and frustrated and the use of ICT becomes a negative experience for teacher in managing students.

Majority of the principals, teachers and technical staffs consistently reported that the maintenance, upgrading and technical support of their ICT equipment was a cause of great strain, and that these were areas that consumed significant amounts of their budget. A little less than half of the schools under study evaluated had made provision for technical support and maintenance of their hardware, while slightly less than half of the schools visited had a maintenance contract with an external contractor. Arrangements at primary level included responsibility for maintaining the ICT system resting with the principal, with another member of the staff, or with a member of the board of management, or subcontracting maintenance support. Reasons offered by those schools that had no ICT maintenance scheme included: the cost; the fact that the ICT infrastructure was so small that its size did not warrant a formal maintenance scheme; and the fact that no member of the staff had the relevant skills or expertise.

4.5 Availability of Funds

In Kenya, the government recognizes the positive effect of ICT in making the country a middle level economy as it is envisaged in Kenya vision 2030. Effort to

implement ICT in schools was first initiated by publishing Sessional paper No.1 of 2005 where ICT was given prominence. The idea was to equip public secondary schools with ICT infrastructure and integrate it in existing school curriculum in order to meet the challenges of information society (GOK, 2005). This section sought to discuss issues pertaining to funding of ICT in Secondary schools in Kenya.

4.5.1 Importance of Funding

The principals, teachers and the technical staff were required to give their level of agreement with the statement that funding is very important in ICT integration. Table 4.8 illustrates that funding is a factor that is considered very important in ICT integration in schools. The findings are shown in Table 4.7.

Table 4.7: Funding is Very Important in ICT Integration

	F	**%**
Strongly Agree	29	61
Agree	7	15
Neutral	8	17
Disagree	1	1
Strongly disagree	3	6
Total	**48**	**100**

Table 4.7 shows that funding is very important in ICT integration remained a challenge in their school, also 61% strongly agreed over the same statement.

4.5.2 Funding and ICT integration in schools

The principals were required to give their level of agreement with the statement that shortage of funds for ICT integration remains a challenge in this school. The findings are shown in Table 4.8.

Table 4. 8: Funding and ICT Integration in Schools

	F	**%**
Strongly Agree	26	54
Agree	12	25
Neutral	10	20
Total	**48**	**100**

Table 4.8 illustrates that shortage of funds for ICT integration remained a challenge in their school, also 25% agreed over the same statement. This finding concurs with Adeyemi and Olaleye (2014) finding that inadequate funding is a major problem inhibiting the usage of ICT equipment for the management of schools in Nigeria. This study concludes that the Kenyan government is not fully

ready to imbibe (ICT) for the effective management of secondary schools. It is therefore essential that the State government supply the necessary ICT equipment to all secondary schools in Kenya.

From the findings, majority of the respondents cited that ICT grants received by schools through relevant MoE schemes had encouraged schools to install or upgrade their ICT systems. In particular, grants had led to improvements in the quality of facilities available in computer rooms, to an expansion in the range of ICT peripherals available, and to the further integration of ICT in teaching, learning and student l management. School principals repeatedly acknowledged that these grants had facilitated the development of their ICT systems. Where such reference was made this study noted that effective use had been made of the funds received. One of the principals commented that “it was clear that these grants have been used effectively to develop the ICT system in the school. This study recommends that all schools should reach the same level of development.

A significant number of respondents cited that progress had not been made towards using the grant made available for networking. In a few schools reasons for such delays were cited, such as the school having been approved for a significant building project, while in the remainder no reasons for lack of progress were offered. While acknowledging the benefits of the grants received, schools

generally reported spending more on ICT than they received in grants. The principals also cited that they depended on private funds to improve their ICT use. According to school heads from these schools, they cited that their schools augmented the financial support received through the MoE with private funds; a little less than half of the thirty-two secondary schools stated that financial assistance for the development of their ICT systems was also received from other sources.

According to the technical officers from the schools, they indicated that their schools were at an advanced stage in the development of ICT. The facilities were of a high standard and improving. The school's access to private funds played a large role in the achievements to date, and into the future. The most frequently reported source of private funds in was fund-raising by parents' councils or parents' groups. Additionally, at primary level it was also common for students to become involved in fund-raising activities. The respondents cited that their schools received contributions of second-hand ICT equipment from businesses and third-level institutions and of equipment received as prizes in competitions. This additional expenditure on ICT displays a particular commitment by schools to providing students with access to ICT.

This study concludes that there is the danger that in relying on private funding sources certain schools may be at a disadvantage. Some students, for example, are likely to be placed at a disadvantage relative to others if their school community does not provide additional funding for its school to purchase ICT equipments. The spending of private funds by schools on ICT equipments could actually be contributing to an exacerbation of the digital divide in society. Clearly, the widespread use of private funding suggests that the demand for ICT equipment exceeds what can be met from the public grants provided to date.

4.6 Accessibility to ICT Infrastructure

The effectiveness of ICT in any school is very much dependent on the quality of the infrastructure present. This section examines some ICT infrastructural issues in schools.

4.6.1 Respondents ICT Skills Self Evaluation

The study sought to establish the self-perception and confidence of the teachers' skill levels using ICT. The main objective for this question was to gain an impression of individual respondent's self-perceived level of ICT competence which, naturally, would affect their capacity to integrate ICT in student management. The findings are shown in Figure 4.1.

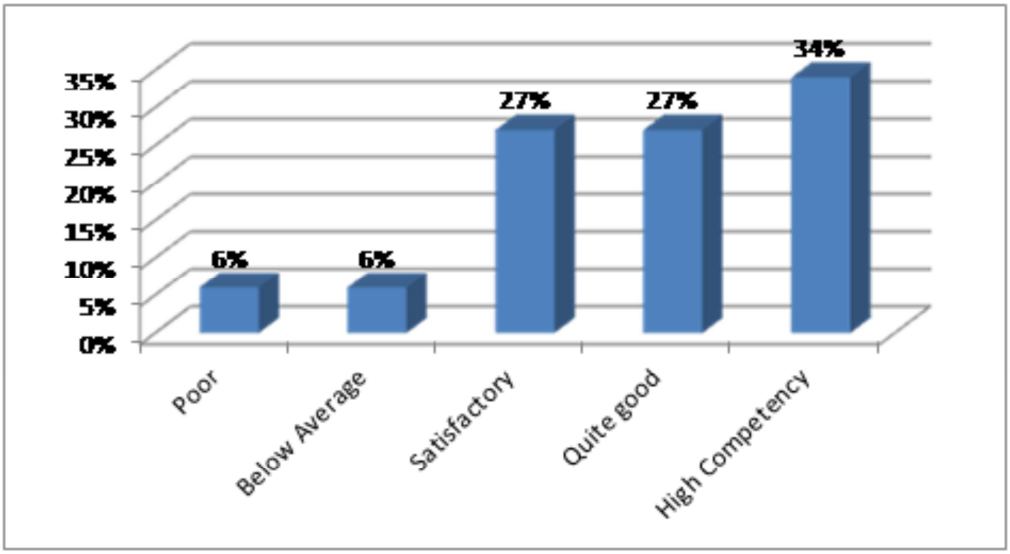

Figure 4.1: Respondents ICT Skills Self Evaluation

From the finding as illustrated in Figure 4.1 at least a 16 (34%) rank themselves as occupying the highest level of competency possible. Another 13 (27%) rank themselves on the second highest level. Three 2 (6%) ranked themselves on the two lowest levels.

4.6.2 Principals, Teachers Professional Development (PD) for ICT Implementation

The teachers and the head of Departments were asked whether they had attended courses to qualify them in the use of ICT after they received their teaching certificates. The findings are shown in Figure 4.2.

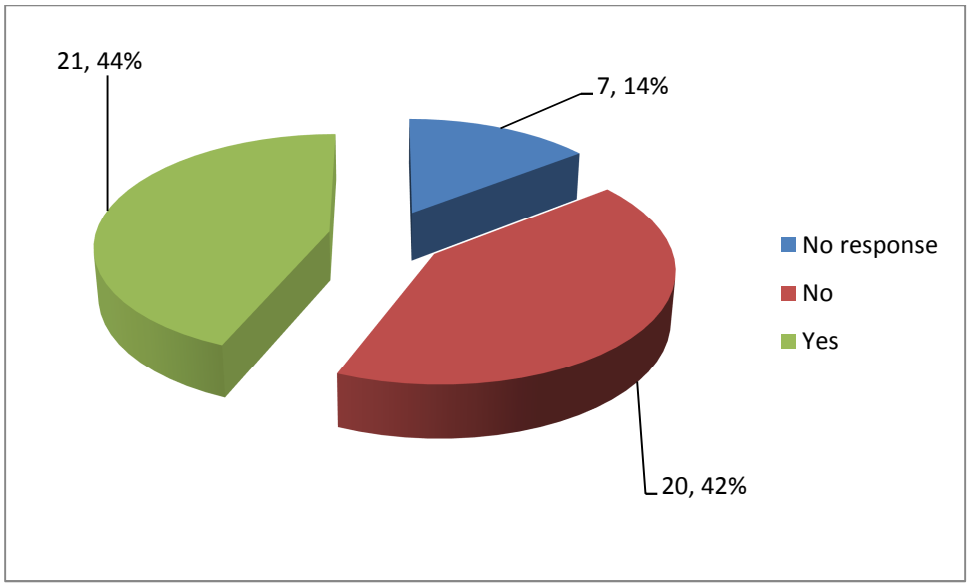

Figure 4. 2: Professional Development (PD) for ICT Implementation

This related mainly to the importance of continued career training in ICT integration to keep up with changes and developments in delivering ICT in pedagogically sound ways. As illustrated in Figure 4.5 most of the teachers and the head of Departments 21(44%) had some experience of professional development (PD) for ICT integration in student management as practicing teachers. This is clearly not a strong majority; hence, the figure seems inadequate given the importance of appropriate ongoing PD for effective and pedagogically sound ICT integration in student management.

Further, this seems a contrast to the need given, as by Kvarstein (2012) that there seems to be a lack of effective of collaborative effort and resource sharing

opportunities to develop their ICT implementation capacity effectively. The study required respondents to describe the state of ICT infrastructure in their schools. The main objective for this question was to give individual respondents an opportunity to describe their own school infrastructure as this allowed for some discussion when comparing the importance of facilities and resources with pedagogical effectiveness and usefulness of ICT and considering the importance of training over investment. From the findings majority of the respondents described the ICT infrastructure as fairly good but there are a lot of outdated computers. Not unusual for computers to be not working or network to be off-line. This caused problems if the teachers are too dependent on digital tools. Some respondents indicated that they have around 80 personal computers at their schools. Majority of the respondents also indicated that they used an intranet, managed their own webpage, had computer rooms, and a decent system and amount of computer equipment and projectors for staff and students. Overall, there's sufficient software and equipment for current needs (could always be more – but there's sufficient).

The main challenge, however as described by the respondents was that the ongoing need for a plethora of teaching ICT experts to help other teachers (and students) use the equipment, software and online resources available. There's certain recalcitrance, especially amongst some older teachers, about properly

integrating ICT possibilities into the student personnel management platform and this to a small extent, hindered the potential for a more effective collaborative process in integrating ICT in student management.

4.6.3 Possession of Electronic Examination Management System/Database

The technical staffs were required to give their level of agreement with the statement that the school has an electronic examination management system/database. The findings are shown in Table 4.9.

Table 4.9: Possession of Electronic Examination Management System/Database

	F	**%**
Strongly Agree	4	8
Agree	13	27
Neutral	1	2
Disagree	9	18
Strongly disagree	22	45
Total	**48**	**100**

According to the findings as shown in Table 4.9 illustrates that some schools had an electronic examination management system/database.

4.7 Government Policy Implementation

Implementation of Government policy important in identifying the aims of using ICT in education and in determining priorities in allocating resources. Mundure (2014) further points out that education authority and the centers for which they are responsible have key tasks related to enabling, implementing and monitoring the use of ICT in secondary schools in Kenya. This study required the respondents to give their level of agreement based the implementation of government policies in secondary schools with respect to integration of ICT in student management.

4.7.1 Need to Develop Curricular Plans and Policies

It was important to ascertain the principals' level of agreement with the statement that there is a need to develop curricular plans and policies to place some structure on the introduction of ICT in this school. The findings are shown in Table 4.10.

Table 4. 10: Need to Develop Curricular Plans and Policies

	F	**%**
Strongly Agree	26	54
Agree	12	25
Neutral	10	20
Disagree	0	0
Strongly disagree	0	0
Total	**48**	**100**

From the findings for schools to successfully integrate ICT in student management, there was a need to develop curricular plans and policies to place some structure on the introduction of ICT in this school. Twenty five percent agreed while 20% were neutral over the same statement.

Another key factor affecting the successful implementation of ICT in schools is the presence of an educational policy and planning strategy relating to ICT implementation. According to Wozney, et al., (2006), the absence of systematic policy and planning strategies can hinder teachers' efforts to integrate ICT into their educational practices. Cuban, et al. (2001) stated that the prevailing assumptions guiding policy on new technologies in schools are deeply flawed and in need of re-assessment. This study infers that there is a need to develop curricular plans and policies to place some structure on the introduction of ICT in education in Kenya.

4.7.2 Educational Policymakers and ICT Integration

The study sought to ascertain the principals' level of agreement with the statement on school administrators paying more attention to policies that stimulate integration of ICT. The findings are shown in Table 4.11.

Table 4.11: School Administrators' Attention to Implementation of ICT Policies

	F	%
Strongly Agree	16	33
Agree	25	53
Neutral	4	9
Disagree	1	1
Strongly disagree	2	4
Total	**48**	**100**

From the findings school administrators need to pay more attention to policies that stimulate ICT integration. This study finding agree with Balanskat, Blamire and Kefala (2006) that educational policymakers should pay more consideration to policies that encourage school administrators integration of ICT more and more effectively.

4.7.3 School Administration Planning for Current Technology

The study sought to ascertain the principals and the technical staffs' level of agreement with the statement on school administration planning implementation of current technology in their schools. The findings are shown in Table 4.12.

Table 4. 12: School Administration Planning for Current Technology

	F	%
Strongly Agree	4	8
Agree	5	11
Neutral	4	9
Disagree	27	56
Strongly disagree	8	16
Total	**48**	**100**

From the findings in 11% schools there are plans for current technology in their. Hew and Brush (2007) state that ICT integration plans assist in the creation of a school culture towards ICT implementation. Balanskat, et al. (2006) suggested that ICT integration plans should include schemes for incentivizing, recognizing and rewarding the teachers' use of ICT, for example, making good ICT integration part of career paths.

4.7.4 Educational Leaders' Perception and Vision Towards ICT Integration

The principals were required to give their opinion regarding a statement on the effective integration of ICT dependency on educational leaders' perception and vision towards ICT integration in schools. The findings are shown in Table 4.13.

Table 4.13: Educational Leaders' Perception and Vision Towards ICT Integration

	F	**%**
Strongly Agree	30	64
Agree	12	25
Neutral	5	10
Disagree	1	1
Strongly disagree	0	0
Total	**48**	**100**

From the findings 64% strongly agreed that effective integration of ICT in students' management depends on educational leaders' perception and vision towards ICT integration in schools. This finding agrees with Keengwe and Onchwari (2011) that educational leaders' perception and vision influence successful implementation of ICT in schools. If educational leaders' perceptions are positive toward use of ICT, then they can easily provide useful insight about its implementation.

4.8 Possible Remedies

The teachers, the technical staffs and the HoD to this study gave some valuable insights on how to overcome challenges affecting the integration of ICT in the management of students. The findings are shown in Table 4.14.

Table 4. 14: Possible Remedies for Challenges Affecting Integration of ICT in Student Management in Secondary Schools (multiple responses)

Suggested remedy	F	%
Enhanced teacher development in ICT through in-service courses	39	82.3
Fundraise to purchase ICT tools and other accessories	35	74.6
Creating awareness of opportunities offered by ICT in schools	30	63.6
ICT literacy should be made compulsory for all teachers	29	60.5
Sharing of ICT infrastructure among the schools	27	57.7

As shown by Table 4.14, 82.3% suggested enhanced teacher development in ICT through in-service courses. Fundraising to purchase ICT tools and other accessories was proposed by 74.6%, while 63.6% suggested creating awareness of opportunities offered by ICT in schools, 60.5% suggested making ICT literacy compulsory for all teachers and 57.7% proposed sharing of ICT infrastructure among schools to ease shortages. These results were in agreements with findings of Bukaliya and Mubika (2011) who found that schools and teacher training

colleges in Zimbabwe were equipped with ICT tools through fundraising and financing from donors. Since teachers' competence is a very trendy theme national curriculum, ICT capabilities needs to be made compulsory for school teachers.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

From the analysis of data collected, the following discussions, conclusions and recommendations were made. The responses were based on the objective of the study which was to determine the factors affecting the integration of ICT in student management in Kenya with special reference to the Mbeere North District in Embu County.

5.2 Summary of Findings

The purpose of this study was to determine the factors influencing the integration of ICT in student management in public secondary. Specifically the study sought to achieve the following objectives: To determine the influence of technical support on the integration of ICT in student management in secondary schools; To assess how availability of funds influence ICT integration in student management in secondary schools; To establish how accessibility to ICT infrastructure influence the integration of ICT in student management in secondary schools and to establish how the implementation of government policy influence the integration of ICT in student management in public secondary schools.

The study employed a descriptive survey design. The target population of this study was the 27 public schools in Kenya. The target respondents were the 27 principals and the 159 teachers and 27 technical staff from the schools. The study utilized stratified sampling technique, from the total population of 213; a sample of 64 representing approximately 30% of the total population was selected. Stratification increases precision without increasing the sample size. Data collection instruments include self administered questionnaires. Analysis started with editing the collected information. Raw data was sorted, checked to establish accuracy, usefulness and completeness. The data was then sorted, coded and arranged serially to make it easy to identify. The coded data was entered in the computer for analysis using the Statistical package for Social Sciences (SPSS) version 17.0 computer software. Quantitative data was analyzed through descriptive statistics using frequencies and percentages. Qualitative data was analyzed by arranging them according to the research questions and objectives. Data was analyzed and recorded using frequency distribution and percentages as Borge and Gall (1993) argues that most used and understood standard proportions are the percentage.

The study revealed that institutional support and management play an important role in ICT integration. Teachers need sufficient technical support to help them in using different ICT resources and the inadequacy in the number of technical

support services severely limits teachers' technology use in student management. Regarding ICT maintenance, technical support, and obsolescence, the study revealed that the biggest problem encountered was lack of technical support. The schools facing this challenge had to take equipments to the nearest IT Company for repair. This finding implies that the maintenance, upgrading and technical support of their ICT equipment is a cause of great strains, and that these are areas that consume significant amounts of secondary schools budget.

The study revealed that shortage of funds for ICT integration remained a challenge in majority of the school in Mbeere North District. Majority of the schools in the District relied on ICT grants received by schools through relevant MoE schemes that encouraged schools to install or upgrade their ICT systems. However in a number of schools under study, they reported delays of such grants that prompted the schools to seek an alternative source of funding. The schools augmented the financial support received through the MoE with private funds; a little less than half of the thirty-two secondary schools stated that financial assistance for the development of their ICT systems was also received from other sources. According to the technical officers from the schools, they indicated that their schools were at an advanced stage in the development of ICT. The facilities were of a high standard and improving. The school's access to private funds played a large role in the achievements to date, and into the future.

The most frequently reported source of private funds in was fund-raising by parents' councils or parents' groups. Additionally, at primary level it was also common for students to become involved in fund-raising activities. The respondents cited that their schools received contributions of second-hand ICT equipment from businesses and third-level institutions and of equipment received as prizes in competitions. This additional expenditure on ICT displays a particular commitment by schools to providing students with access to ICT.

The effectiveness of ICT in any school is very much dependent on the quality of the infrastructure present. The study showed that the respondents were competent enough to use the available ICT equipment in their schools. The study required respondents to describe the state of ICT infrastructure in their schools. The study found that in majority of the schools the ICT infrastructure was fairly good but there were a lot of outdated computers. It was a normal occurrence for computers not to be working or network to be off-line. This caused problems if the teachers were too dependent on digital tools. Some schools had around 80 personal computers. Overall, there's sufficient software and equipment for current needs (could always be more – but there's sufficient).

The main challenge, however was that the ongoing need for a plethora of teaching ICT experts to help other teachers (and students) use the equipment, software and

online resources available. There was certain recalcitrance, especially amongst some older teachers, about properly integrating ICT possibilities into the student management platform and this to a small extent, hindered the potential for a more effective collaborative process in integrating ICT in student management. The study found that for secondary schools to successfully integrate ICT in student management, there is a need to develop curricular plans and policies to place some structure on the introduction of ICT in this school. The study further revealed that effective integration of ICT in students' l management depends on educational leaders' perception and vision towards ICT integration in schools.

5.3 Conclusions

From the study findings, the study concludes that technical support and management play an important role in ICT integration and teachers need sufficient technical support to help them in using different ICT resources. There is inadequacy in the number of technical support services in secondary schools in Mbeere North District and as a result the situation has been severely limiting teachers from using technology in student management. The study also concludes that in Mbeere North District, the schools that have adopted ICT encounter challenges relating to equipment repair since they have to visit the nearest IT Company for repair.

The study concludes that shortage of funds for ICT integration is a major challenge in majority of the school in Mbeere North District. Majority of the schools in the District relies on ICT grants received by schools through relevant MoE schemes. As a result of delays of such grants from MoE schemes, some schools seek alternative source of funding such as fund-raising by parents' councils or parents' groups. The study concludes that in majority of the schools the ICT infrastructure is fairly good but there are a lot of outdated computers that some times are not thus being a challenge especially to the teachers who depend on the digital tools. In some schools older teachers have problems using ICT tools that enhance the integration of ICT in student management. The study concludes that effective integration of ICT in students' management depends on educational leaders' perception and vision towards ICT integration in schools.

5.4 Recommendations from the Study

From the foregoing conclusions the following recommendations are made:

This study recommends that the ministry of education should ensure there is no delay of funds meant for ICT implementation in secondary schools in Kenya in order to reduce or cut the dangers associated with reliance of private funding because this schools may be at a disadvantage and as a result contribute to an exacerbation of the digital divide in society. Clearly, the widespread use of private

funding suggests that the demand for ICT equipment exceeds what can be met from the public grants provided to date.

In order to integrate ICT in student management, there is need for the school principals to make arrangements with regular appointments with technical assistance to troubleshoot hardware and software problems, test out equipment and install software, and maintain hardware and catalogue software. This will help overcome difficulties that are faced while accessing maintenance in an isolated rural area that is hugely expensive.

The Board of management should that public secondary schools apply ICT in teaching and learning in teacher education during pre-service, induction and in continuing professional development. The study recommends that there is a need to develop curricular plans and policies to place some structure on the introduction of ICT in secondary schools in Kenya. Effective integration of ICT in student management depends on educational leaders' perception and vision towards ICT integration in schools.

The study recommends that teachers should develop their skills in the use of available ICT by enrolling to colleges. The study showed that a lack of appropriate training for teachers act as a major barrier to the effective use of ICT in schools. The study recommends that teacher training institutions should provide student teachers with the skills necessary to effectively use ICT and foster in them a culture of using ICT in their work. The colleges should also develop

appropriate postgraduate courses to offer to the teaching profession in general, for example a higher diploma for school ICT co-coordinators. The resource demands of these developments need to be examined by the colleges and the appropriate funding bodies.

5.5 Suggestions for Further Research

In view of the findings of this study, the following recommendations for further research are suggested. The present study was only confined to Mbeere North District. It would however be useful to carry out a similar study in other districts in Kenya. It would be useful to carry out the same type of research across East Africa and beyond and see whether the same results would be replicated.

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APPENDICES

Appendix I: Introduction Letter

University of Nairobi

NAIROBI.
July 2015

The Principal

…..Sec School

Box…..

MBEERE

Dear Sir/Madam,

RE: COLLECTION OF SURVEY DATA

I am currently a postgraduate student at University of Nairobi, Kikuyu campus carrying out a field research in partial fulfillment of the course. This research is aimed at investigating the factors influencing integration of information and technology in student management in public secondary school in Mbeere North District Kenya.

You have been selected due to your role as a secondary school Principal in Mbeere North District. Your responses will be held in strict confidence and used only for research. None of the information will be published in a manner which would enable any individual, school, teacher, or principals to be identified. Your cooperation and sincerity in completing the attached questionnaire will be highly appreciated.

Thank you in advance.

Yours faithfully,

Janet Kaimenyi

APPENDIX II:

QUESTIONNAIRE FOR PRINCIPAL

Instructions:

This questionnaire consists of four parts. Please fill in the blank spaces and tick (√) where appropriate. Please complete the questionnaire as accurately as you can.

Section A: General Information

1. What is your age?

   20 – 30 Years ( ) 31-40 years ( )

   40 – 50 Years ( ) 51-60 years ( )

2. What is your current position …….

3. Please indicate your years of service in Current Position

   Less than 1 year ( ) 1 - 5 years ( )

   6 - 10 years ( ) Over 10 years ( )

4. Level of education ……

Section B: Accessibility to ICT Infrastructure

5. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about accessibility to ICT infrastructure.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	This school has internet connections					
	The school has an electronic examination management system/database					
	teachers need sufficient technical support to help them in using different ICT resources					
	there is adequacy of technical support services					

Section C: Government Policy Implementation

14. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about government policy and planning.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Educational policy and planning strategy on ICT integration affects the successful integration of ICT in					

	student l management in this school					
	There is a need to develop curricular plans and policies to place some structure on the introduction of ICT in this school					
	ICT integration plans assist in the creation of a school culture towards ICT integration					
	Educational policymakers should pay more attention to policies that stimulate school administrators integrate ICT more and more effectively					
	There is planning for current technology in this school					
	Effective integration of ICT depends on educational leaders' perception and vision towards ICT and school culture					

Section D: Technical Support

15. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about technical support.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Technical support plays an important role in ICT integration					
	Administrators need sufficient technical support to help them in using different ICT resources					
	Inadequate number of technical support services in this school severely limits technology use					
	Lack of technical education and training is another barrier to the successful integration of ICTs in this school					

Section E: Availability of Funds

16. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about Availability of financial resources.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Funding is a factor that is considered very important in ICT integration in this school					
	Shortage of funds for ICT integration remains a challenge in this school					

Section F: Student Management

17. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about student l management.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	In this school there is a computer for examination exercise					

	ICT facilities like emails and SMS enhance effective communication between the administration and other examination officials during exam					
	the available ICT facility make easy tracking of students progress during examination					
	the available ICT facility make easy the evaluation of students performance online					
	With availability of ICT, marks for assessed/evaluated work are recorded and kept electronically					

18. In your own opinion suggest possible remedies suggested by teachers for challenges affecting adoption and use of ICT in schools

……

……

Thank you for your assistance

APPENDIX III

QUESTIONNAIRE FOR TEACHERS

Instructions:

This questionnaire consists of four parts. Please fill in the blank spaces and tick (√) where appropriate. Please complete the questionnaire as accurately as you can.

Section A: General Information

6. What is your age?

21 – 30 Years	( )	31-40 years	( )
41 – 50 Years	( )	51-60 years	( )

7. What is your current position …….

8. Please indicate your years of service in Current Position

Less than 1 year	( )	1 - 5 years	( )
6 - 10 years	( )	Over 10 years	( )

9. Level of education ……

Section B: Accessibility to ICT infrastructure

10. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about accessibility to ICT infrastructure.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	This school has internet connections					
	The school has an electronic examination management system/database					
	teachers need sufficient technical support to help them in using different ICT resources					
	there is adequacy of technical support services					

Section C: Government Policy Implementation

14. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about government policy and planning.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Educational policy and planning strategy on ICT integration affects the successful integration of ICT in					

	student management in this school					
	There is a need to develop curricular plans and policies to place some structure on the introduction of ICT in this school					
	ICT integration plans assist in the creation of a school culture towards ICT integration					
	Educational policymakers should pay more attention to policies that stimulate school administrators integrate ICT more and more effectively					
	There is planning for current technology in this school					
	Effective integration of ICT depends on educational leaders' perception and vision towards ICT and school culture					

Section D: Technical Support

15. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about technical support.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Technical support plays an important role in ICT integration					
	Administrators need sufficient technical support to help them in using different ICT resources					
	Inadequate number of technical support services in this school severely limits technology use					
	Lack of technical education and training is another barrier to the successful integration of ICTs in this school					

Section E: Availability of Funds

16. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about Availability of financial resources.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Funding is a factor that is considered very important in ICT integration in this school					
	Shortage of funds for ICT integration remains a challenge in this school					

Section F: Student Management

17. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about student l management.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	In this school there is a computer for examination exercise					
	ICT facilities like emails and SMS enhance effective communication between the administration and other examination officials during exam					
	the available ICT facility make easy tracking of students progress during examination					
	the available ICT facility make easy the evaluation of students performance online					
	With availability of ICT, marks for assessed/evaluated work are recorded and kept electronically					

18. In your own opinion suggest possible remedies suggested by teachers for challenges affecting adoption and use of ICT in schools

Thank you for your assistance

APPENDIX IV

QUESTIONNAIRE FOR TECHNICAL STAFF

Instructions:

This questionnaire consists of four parts. Please fill in the blank spaces and tick (√) where appropriate. Please complete the questionnaire as accurately as you can.

Section A: General Information

11. What is your age?

22 – 30 Years	( )	31-40 years	( )
42 – 50 Years	( )	51-60 years	( )

12. What is your current position …….

13. Please indicate your years of service in Current Position

Less than 1 year	( )	1 - 5 years	( )
6 - 10 years	( )	Over 10 years	( )

14. Level of education ……

Section B: Accessibility to ICT infrastructure

15. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about accessibility to ICT infrastructure.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	This school has internet connections					
	The school has an electronic examination management system/database					
	teachers need sufficient technical support to help them in using different ICT resources					
	there is adequacy of technical support services					

Section C: Government Policy implementation

14. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about government policy and planning.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Educational policy and planning strategy on ICT integration affects the successful integration of ICT in					

	student l management in this school					
	There is a need to develop curricular plans and policies to place some structure on the introduction of ICT in this school					
	ICT integration plans assist in the creation of a school culture towards ICT integration					
	Educational policymakers should pay more attention to policies that stimulate school administrators integrate ICT more and more effectively					
	There is planning for current technology in this school					
	Effective integration of ICT depends on educational leaders' perception and vision towards ICT and school culture					

Section D: Technical Support

15. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about technical support.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Technical support plays an important role in ICT integration					
	Administrators need sufficient technical support to help them in using different ICT resources					
	Inadequate number of technical support services in this school severely limits technology use					
	Lack of technical education and training is another barrier to the successful integration of ICTs in this school					

Section E: Availability of Funds

16. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about Availability of financial resources.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Funding is a factor that is considered very important in ICT integration in this school					
	Shortage of funds for ICT integration remains a challenge in this school					

Section F: Student management

17. Please indicate with a tick (✔) as to the extent to which you agree or disagree with the following statements about student management.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	In this school there is a computer for examination exercise					

	ICT facilities like emails and SMS enhance effective communication between the administration and other examination officials during exam					
	the available ICT facility make easy tracking of students progress during examination					
	the available ICT facility make easy the evaluation of students performance online					
	With availability of ICT, marks for assessed/evaluated work are recorded and kept electronically					

18. In your own opinion suggest possible remedies suggested by teachers for challenges affecting adoption and use of ICT in schools

……

……

……

Thank you for your assistance

APPENDIX V:

RESEARCH AUTHORIZATION

NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471, 2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No.

Date:
23rd July, 2015

NACOSTI/P/15/4499/7014

Macaki Janet Kaimenyi
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Factors influencing integration of Information Communication and Technology in student personnel management in public secondary schools in Mbeere North District, Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in the **Embu County** for a period ending **22nd December, 2015.**

You are advised to report to **the County Commissioner and the County Director of Education, Embu County** 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. S. K. LANGAT, OGW
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Embu County.

The County Director of Education
Embu County.

APPENDIX VI:

RESEARCH PERMIT

THIS IS TO CERTIFY THAT:
MS. MACAKI JANET KAIMENYI
of UNIVERSITY OF NAIROBI, 0-60104
SIAKAGO,has been permitted to conduct
research in *Embu County*

on the topic: *FACTORS INFLUENCING INTEGRATION OF INFORMATION COMMUNICATION AND TECHNOLOGY IN STUDENT PERSONNEL MANAGEMENT IN PUBLIC SECONDARY SCHOOLS IN MBEERE NORTH DISTRICT, KENYA*

for the period ending:
22nd December,2015

.....
Applicant's
Signature

Permit No : NACOSTI/P/15/4499/7014
Date Of Issue : 23rd July,2015
Fee Recieved :Ksh. 1000

.....
Director General
National Commission for Science,
Technology & Innovation

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

NACOSTI

National Commission for Science,
Technology and Innovation

RESEARCH CLEARANCE
PERMIT

Serial No. A 5925

CONDITIONS: see back page