INFORMATION COMMUNICATION AND TECHNOLOGY RELATED FACTORS INFLUENCING IMPLEMENTATION OF STRATEGIC PLANS IN PUBLIC SECONDARY SCHOOLS IN KASARANI SUB COUNTY, KENYA

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DECLARATION

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

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DEDICATION

This project is dedicated to my dad Mr. David Gitau, my brothers Peter Gitau Muchiri and Ian Mureithi.

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First, I wish to express gratitude to God almighty for granting me grace and good health during this time of my academic life. Secondly, I acknowledge my supervisors Dr Ibrahim Khatete and Dr Reuben Mutegi for their guidance, encouragement and their tireless efforts in ensuring the success of this work. I sincerely appreciate their efforts in ensuring the completion of this work. Thirdly, great appreciation goes to my family members for their support and guidance throughout this project. Fourth, I appreciate my colleagues; Abdirisaq, Rosemary, Abdallah, Jedidiah and Robert for their support and cooperation. Special thanks to you all and God bless you.

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LIST OF ABBREVIATIONS AND ACRONYMS

EU	European Union
GoK	Government of Kenya
ICT	Information and Communication Technology
NESP	National Educational Sector Plan
OECD	Organization for Economic Cooperation and Development
UIS	UNESCO Institute of Statistics
UNESCO	United Nations Educational, Scientific and Cultural Organization

ABSTRACT

The purpose of the study was to investigate Information communication and technology related factors influencing implementation of strategic plans in public secondary schools in Kasarani Sub County, Kenya. The objectives that guided the research were; to establish the influence of adequacy of Information Communication and Technology resources on implementation of strategic plans in public secondary schools in Kasarani Sub County. To establish how Information Communication and Technology policy influences the implementation of strategic plans in public secondary schools in Kasarani Sub County, to assess how teachers' skill level in Information Communication Technology influences the implementation of strategic plans in public secondary schools in Kasarani Sub County and to establish how technical support in the use of Information and Communication Technology influences implementation of strategic plans in public secondary schools in Kasarani Sub County. The study was guided by the general system theory by Ludwig von Berterlanffy (1956). The study was carried out using descriptive survey design and data collection done using questionnaires for teachers and students. An interview guide was used for principals. The target population was 12 principals, 1306 form three students and 280 teachers in public secondary schools in Kasarani Sub County. Census design was used to sample the principals. The study sample comprised of 12 principals, 84 teachers and 297 students in all public schools in Kasarani Sub County. Data analysis was done using descriptive statistical techniques with the aid of computer Statistical Packages for Social science (SPSS) program version 21. The findings were presented using frequency tables, percentages and charts. Spearman correlation was used to analyse the relationship among the variables in the four objectives. The researcher established that adequacy of ICT resources influences the level of implementation of strategic plans in public secondary schools in Kasarani. The researcher also established that there was a positive correlation between ICT policies and the level of implementation of strategic plans. There was also a positive correlation between ICT training, technical support and the level of implementation of strategic plans in public secondary schools. Based on the findings from the study, the researcher recommended that secondary schools should ensure that their strategic plans focus on use of ICT. The researcher also recommended that secondary schools should form partnerships to ensure that there are adequate resources in their schools.

CHAPTER ONE

INTRODUCTION

1.1. Background to the study

According to Macsen (1992), strategic planning was advanced in the United States of America in the 1960s by private corporations as a long term outline of making decisions. Compared to traditional ways of planning, Strategic planning is mainly characterized by implementation and its flexibility to the ever changing environment. A strategic plan has been defined differently by different authors. Higgins (1993) described strategic planning as a practice in which objectives, the purpose, the mission, policies and programmes to be implemented are developed after external and internal aspects of an institution are examined.

Conley (2013) defined a strategic plan as a plan that includes beliefs, a mission, vision, objectives and strategies in a school. He regards strategic plans as apparatus that numerous organizations use to ensure that they remain successful and always be on track, a strategic plan is a roadmap for triumph in an organization. You can use the same genus of educational plans to establish a route to academic success in school or college. According to Fleming, (2013), a plan involves a tactic for realizing success in a one year of school or for the entire time a person spends in school.

Bryson (1995) also notes that strategic planning contributes to the successful performance of any organization and it also provides efficiency in operations of an organization. The benefits associated with strategic planning in

education institution depends on an elaborate Information Communication and Technology plan to facilitate the achievement of the laid down plans Zhihua and Zhaojun (2009). Information, and Communication Technology therefore becomes very vital in the twenty first century learning environment UNESCO (2010)

According to UNESCO (2010) the term Information Communication Technology (ICT) is plural comprising of the many technologies that are used for capturing, interpreting, storing and transmitting information. Information and Communication Technology is one of the building blocks of the present society and in the modern world. Knowledge in ICT is regarded as core in education along with numeracy, writing and reading (UNESCO, 2002).

Different researchers have documented the benefits associated with using ICT in improving quality of education and attainment of educational objectives. Aleksander (2012), Kazi, Ahmad and Mosa (2012) and Honan (2010) established that ICT is a vital tool for teaching and learning. Hennessey et al (2010) also agree that appropriate utilization of ICT for specific purposes and contexts can be very effective in attaining the laid down educational goals. Besides teaching and learning, Mwalongo (2011) and Ziraba (2012) assert that ICT can be used as a tool for management and administration of educational services. This leads to effective and efficient use of physical and financial resources Mwalongo (2011)

To be able to effectively use ICT in education, proper policies at the national level and at the school level have to be established. This has been articulated

in a UNESCO-UIS (2014) report which clearly underscores the importance of different countries having different policies to address their specific situations. The Indian government for example, has put in place policies that focus on ICT in schools. As a result of the policies, technology has gradually been used in elementary and secondary schools where administrators in schools use Information and Communication Technologies to facilitate learning, teaching and for all school managerial roles UNESCO- UIS (2014)

Many African countries such as Uganda, Rwanda and South Africa have developed their own policies to streamline ICT usage to meet the needs of the twenty first century (Hennessey, Harrison and Wamakote 2010). According to a report by the Rwandan Ministry of Education (2016), the policy on use of the computers in schools has had a great improvement on lesson delivery; use of multimedia interactive digital content has improved student motivation and it has also improved decision making by school management as data is readily available.

Kozma (2003) also carried a study in a number of ICT classrooms in different countries where he established that there was an association between ICT utilization and the policies that were put in place. Through various policies, Kenya intends to provide quality education training and research that is competitive globally and provides for development by coming up with computer programmes that equip the learners with modern Information Commutation and Technology skills (NESP, 2014).

Most secondary schools base their strategic plans on the national strategic plan. Strategic plans in schools give guidelines on use of financial resources, efforts aimed at improving student achievement and management of physical resources in schools. As noted in the NESP (2014), ICT has been given prominence in facilitating the attainment of the goals and objectives of the education sector of providing quality education services. To tap the benefits that accrue to the use of ICT in education, governments around the world are investing a lot of resources and are coming up with policies to support the use of ICT the implementation of strategic plans that have been put in place in different schools.

Use of ICT to implement strategic plans in secondary schools can be hampered by lack of adequate skills by the users of ICT as Kiptalam and Rodriguez (2011) notes. In a study to establish utilization of ICT in Nigerian secondary school management, Ezeuwa (2014) established that while most ICT facilities were available in most Nigerian secondary schools, their use was low owing to shortage of adequate training of the teachers. Jones (2004) also asserts that the way ICT is used greatly depends on the competency levels of the users involved. The more the skills possessed by one in Information and Communication Technologies, the more confident they feel and the more frequently they use the ICTs.

A study by Peralta and Costa (2007) to establish how competence influences the utilization of Information and Communication Technology in teaching and learning in European nations found out that most teachers in Italy were not

able to utilize ICT for teaching and learning because they lacked technical, pedagogic skills in ICT.

Lack of adequate ICT facilities or resources also contribute to low utilization of ICT to implement strategic plans in secondary schools. Utilization is inhibited if the resources involved are not in adequate supply. ICT infrastructure indicates the observed availability of the ICT tools such as software, hardware and other ICT equipment provided in the learning institution (Vanderlinde and Van Braak, 2010).

Different researchers have established that infrastructure has a role to play in the use of ICT to implement strategic plans in schools. Lu, Tsai, and Wu, D. (2015) carried out a research to establish how the differences in infrastructure in different schools in China influenced utilization of ICT in improving the academic performance of schools. The study established that different infrastructure levels in different schools influenced to a large extent the utilization of ICT in performing different purposes within different schools.

Since various efforts have been put in place to ensure that most of the secondary schools are equipped with ICT facilities, it becomes very vital to determine whether the ICT facilities are adequate and are being used to the fullest and therefore determine what hampers the use of ICT in public secondary schools in Kasarani Sub County hence the assessment of level of utilization of ICT in meeting secondary schools strategic plans.

1.2. Statement of the problem

Different secondary schools have come up with strategic plans as directed by the ministry of education. The strategic plan outlines clearly the objectives and goals that the school intends to achieve within a stipulated period of time. However, Lewa, Mutuku & Mutuku (2009) note that though most schools have adopted strategic plans, effective implementation of the plans continues to be a problem as indicated by low academic performance of schools and mismanagement of financial and physical resources within schools.

The dawn of the information age has seen many schools in Kenya installing ICT facilities through various initiatives spearheaded by the government, development partners and individual schools to ensure utilization of ICT for teaching and in management of schools. These initiatives consume a lot of resources used to supply hardware, software, recurrent expenditure for maintenance of the facilities and training of teachers.

Most of the studies in strategic planning have mainly focused on adoption with very scant focus on implementation of the plans. Even the little research that has been done on implementation of strategic plans has not focused on how the ICT resources that have been provided in schools can influence the level of implementation of the plans. Therefore, the study sought to focus on ICT related factors that influence level of implementation of strategic plans in Kasarani Sub County.

1.3. Purpose of the study

The purpose of this study was to determine the ICT related factors that influence the implementation of strategic plans in public secondary schools in Kasarani Sub County Nairobi Kenya.

1.4. Objectives of the study

The study aimed at achieving the following objectives;

i. To establish the influence of adequacy of Information Communication and Technology resources on implementation of strategic plans.
ii. To establish influence of Information Communication and Technology policy on the implementation of strategic plans.
iii. To assess the influence of teachers' skill level in Information Communication Technology on implementation of strategic plans.
iv. To establish influence of technical support in the use of Information and Communication Technology influences implementation of strategic plans.

1.5. Research questions

The study aimed to answer the following research questions;

i. To what extent does the adequacy of ICT facilities influence the use of ICT in implementation of strategic plans?
ii. How does a schools' ICT policy influence the utilization of ICT resources in implementation of strategic plans?
iii. How does the teachers' ICT skill level influence the utilization of ICT resources in implementation of strategic plans?

iv. How does technical support influence the level of utilization of ICT facilities in implementation of strategic plans?

1.6. Significance of the study

The findings of the study may provide Kenyan secondary school teachers with more understanding of how different ICT facilities can be effectively utilized to achieve educational goals in secondary schools. The findings of the study may also be important to the administrators of secondary schools as they can enlighten themselves on the kind of policies that promote the utilization of ICT in schools. The Ministry of Education, Science, and Technology may also stand to benefit from the findings of the study as they may provide an indication of how well the ICT resources allocated to different educational institutions influence implementation of strategic plans.

1.7. Limitations of the study

Limited literature on the utilization of ICT in implementation of strategic plans was a challenge to the researcher. The researcher mitigated this challenge by covering a wider population. The respondents may have given socially acceptable answers in an effort to conceal the actual situation regarding the use of ICT in implementation of strategic plans. To mitigate this, the researcher explained fully the purpose of the study to the respondents.

1.8. Delimitations of the study

The researcher delimited the study to secondary schools within Kasarani Sub County. The researcher gathered information on utilization of Information and Communication Technologies from secondary principals, teachers and

students. The study was focused on public secondary schools only because they benefit most from ICT initiatives spearheaded by the government.

1.9. Basic assumptions of the study

The study was based on the following assumptions;

i) The schools involved in the study had a strategic plan as required by the government policy guidelines.
ii) Information and communication facilities facilitate the implementation of strategic plans.

1.10. Definition of significant terms

ICT utilization refers to putting Information and Communication Technologies into good use in order to effectively implement the schools strategic plans.

ICT policies refer to a set of guidelines that are put in place by the government and individual institutions to guide on the usage of ICTs.

Information Communication Technology (ICT): refers to a varied set of technological tools and resources used to create, store, transmit exchange or share information.

Technical Support refers to the provision of aid to technology users as they utilize different technology products such as computers, software or other ICT resources.

Teachers ICT skill levels refers to the ability of teachers to make good use of the ICT resources at their disposal

ICT resources refers to the different software and hardware that are used for different purposes in an educational institution

Digital divide refers to the difference between those who have and use ICT resources and those who do not have access and are limited in terms of ICT use.

Implementation of strategic plans refers to attaining by the school whatever the objectives the school has set to achieve in relation to financial, academic and has set to achieve

1.11. Organization of the study

The study was organized in five chapters. Chapter one was the introduction which covered the background to the study, statement of the problem, research objectives, research questions, limitations, delimitations of the study, key assumptions and definition of significant terms. Chapter two covered review of related literature comprising of the introduction, the concept of ICT, adequacy of ICT resources policy and ICT utilization, Teachers ICT skills and technical support in utilization of ICT, summary of literature review, theoretical framework and conceptual framework of the study. Chapter three dealt with research methodology covering the research design, target population, sample size and sampling procedure, research instruments, validity and reliability of instruments, data collection procedures and data analysis techniques and ethical considerations. Chapter four presented data analysis

and interpretation which covered description and analysis of data, discussion and interpretation. Chapter five, the summary included conclusions and recommendations of the study which dealt with summary of highlights of study, conclusions, recommendations and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter contains literature on the Information Communication Technology related factors that influence the implementation of strategic plans in public secondary schools. This is covered under the following headings. Adequacy of Information Communication and Technology resources, secondary schools' Information Communication and Technology policies, teachers ICT skill levels in secondary schools, technical support in ICT, summary of literature review, theoretical framework, and the conceptual framework

2.2. Adequacy of ICT resources and implementation of strategic plans

Information Communication and Technology infrastructure indicates the perceived suitability and availability of the Information Communication and Technology tools such as software hardware, and other ICT equipment provided in a learning institution (Van Braak and Vanderlinde, 2010). Pelgrum (2001) further describes ICT infrastructure as the accessibility of, software, internet access, equipment and other related resources in a learning institution. Utilization of ICT in implementation of strategic plans in secondary schools cannot take place if the ICT facilities and infrastructure are inadequate.

Different researchers have indicated that inadequacy of educational resources is a great barrier to the utilization of ICT in schools in Africa (Hennesey, 2010). For proper integration and usage of ICT in improving academic

outcomes in the education sector, Plomp, Law, Anderson and Quale (2009), indicate that Access to ICT adequate resources and infrastructure in schools is a necessity.

In a study on the role that ICT plays and how it is applied to classrooms in primary and secondary schools in China, Lu, Tsai and Wu (2015) found out that Infrastructure plays a great role in the integration of Information, Communication Technology in learning institutions. The researchers established that disparities in access to adequate resources contribute to the differences in the academic achievement of the different schools in China. It was also established that in most of the urban schools that were better equipped with ample infrastructure, performance and utilization in student management was found to be better as compared to schools that were not properly equipped.

Pelgrum (2001) also explored the views of different experts from 26 different countries around the world on what were the main barriers to the utilization of ICT in implementation of strategic plans in schools. He made a conclusion that 40 percent of the barriers identified were associated with availability and accessibility of ICT infrastructure. The barriers that he identified were: scarce numbers of computers, inadequate software, insufficient internet access and insufficient peripherals.

While many economically developed countries have made great advancements in equipping their schools with adequate ICT resources, many African countries and other developing nations seem to be struggling to do the same.

In a report, UNESCO-UIS (2015) indicates that resources in many African schools are weak and many of the countries do not utilize the computers effectively because many of the computers are obsolete. The report also indicates that the learner computer ratios are still high in most of the African nations due to the low numbers of computers available in most African countries which limits the use of ICT to implement different strategic plans in the schools. In countries such as Guinea and Madagascar, the learner computer ratios are as high as one computer for every five hundred learners in secondary schools therefore utilization of the ICT is a main problem (UNESCO-UIS, 2015).

In the UNESCO (2015) report, it was established that ICT facilities are expensive to purchase and maintain. High cost leads to lack of adequate hardware and software. Inadequate hardware and software becomes a big hindrance to how schools integrate ICT and therefore a barrier to implementation of strategic plans using ICT.

Another major problem that inhibits the use of ICT in the public secondary schools in Kenya is limited connectivity and network resources. The internet is very useful as it helps learners and teachers acquire knowledge from online sources. There is limited high speed internet connectivity in some areas and where there is high speed connectivity, the high costs becomes a great impediment to connection in those areas. ICT resources are very expensive and are therefore not affordable to most of the secondary schools in Kenya NESP (2014).

2.3. Policy in ICT and implementation of strategic plans in secondary schools

A policy is a guideline for action. A national Information Communication and Technology policy sets out the goals, objectives and strategies that are to be put in place to achieve them. Proper policies are a recipe for change (UNESCO-UIS, 2015). To demonstrate how policy influences utilization of ICT to implement strategic plans, Kozma (2003) carried out a study of several classrooms that use ICT in different countries. In 127 cases out of the 174 schools that participated, there was a clear association between national policies and ICT innovation in classrooms and that promoted the use of ICT in schools (Jones, 2004). It is however important to note that while the institution of ICT policy is a requirement for effective utilization of ICT, it does not guarantee proper implementation and impact in any learning institution (Cuban and Tyack, 1995).

A report by UNESCO-UIS (2015) observes that ICT policies vary from country to country and they address different aspects of education including management, pedagogy and also different levels of education. Policy influences the planning and use of ICT in implementation of laid out objectives in education. It also influences the teachers' perceptions towards the use of ICT. In Malaysia for example, the government has come up with various policies to guide the Use of ICT in education. The ICT policies in Malaysia emphasize on ICT for all students, the function of ICT as a vital tool for learning and teaching and using ICT to ensure that management systems in

schools are productive, efficient and effective (Ministry of Education, Malaysia 2010)

Kenya has an ICT policy whose key objective is to facilitate sustainable development, growth of the economy and eradication of poverty through technologies that are productive and effective (GoK 2006). The National ICT strategy was put in place as a plan to implement the ICT policy in education; it identified ICT as a very important tool for education and training purposes. The main purpose is to find ways of successfully adopting and using ICT in education (Gok, 2006).

The strategic pillars identified in The National ICT Strategy for implementation of ICT in education are as follows: establishment of an ICT agenda;connectivity and network resources; Tapping new technologies provision of technical support; digital content development; integration of ICT in education; digital equipment training (capacity development, including professional development); research and development; partnership and resource mobilization; legal and regulatory framework; and monitoring and evaluation (Gok, 2006). If well implemented, the strategic pillars could go a long way in ensuring that ICT is properly and effectively integrated and utilized in education to attain the goals of education and in ensuring the acquisition of twenty first century skills that are vital to the economic, social and political development of the nation.

According to a UNESCO (1999) report, decentralization of policies is very important if any meaningful educational reform is to take place. This means

that individual schools are allowed to put in place different policies to suit their specific contexts and facilitate educational reforms in the schools. The Kenya ICT policy also advocates for innovative practices that can facilitate the implementation of ICT in individual schools. This being the case, individual schools should come up with proper ICT policies that can help them address some issues in utilization of ICT. Research by Karagiorgi and Charalambousm (2004) indicates that decentralized ICT policies can provide solutions where centralized policies cannot. Since the trend in technology is dynamic, schools have to establish school policies that address the changes that keep taking place in the technology world and the school policies should be in line with the Ministry of education guidelines on ICT in schools.

School ICT policies should be formulated with the interests of all the users in mind. ICT policy becomes acceptable if all the stakeholders are involved in its formulation UNESCO (2010). ICT policy in individual schools is therefore ideal for addressing ICT needs that are school specific and in the long run the ICT policy contributes to achievement of the strategic plans in the schools as it ensures proper curriculum implementation and proper management of resources within the school.

2.4. Teachers ICT Skills and implementation of strategic plans in secondary schools.

With a great role played by ICT in education, it is very important that computer users in the schools are endowed with appropriate skills and competencies. Computer literacy is a very significant factor to consider when

the issue of Information Communication Technology utilization in schools is addressed. Van Braak (2004) defines computer competence or skills as having the ability to work with a varying range of computer applications to perform different roles.

The way Information and Communication Technology is used greatly depends on the competency levels of the users involved. The more the skills one has in Information and Communication Technologies, the more confident they feel and the more frequently they use the ICTs (Jones, 2004). Teachers with low confidence will try to avoid the use of ICT as much as they possibly can. According to Bordbar (2010), teachers' computer competence can be used to predict whether ICT will be integrated for learning and teaching purposes in schools thus affecting academic achievement of the learners.

In a study carried out in several European nations to determine how competence in ICT influences academic achievement of learners, Peralta & Costa (2007) established that teachers in Italy had identified lack of technical skills and pedagogical skills as the important setbacks to utilization of ICT in improving the academic performance of the schools. Peralta & Costa (2007) noted that teachers that have a greater familiarity in using Information and communication technologies have greater confidence and they use them efficiently and frequently. Evidence suggest that majority of teachers who lack knowledge and skills that would allow them make informed decisions on proper use of ICT in schools also reported neutral or negative attitude towards integration of ICT into learning and teaching (Bordbar, 2010).

This is in agreement with Jones (2004) finding of computer competence being directly related to teacher confidence in computer use. A review by Askim (2003) to establish the perceptions of teachers on computer knowledge found out that incompetence among the teachers was a result of lack of training and limited training opportunities among the teachers. According to Pelgrum (2001) lack of ICT skills and competencies among teachers is a great barrier to the attainment of the ICT related goals in a schools. Pelgrum further states that ICT training needs depends on the prevailing circumstances in an individual school.

According to Kidombo Gakuu and Ndiritu (2012) the competence of the school principal is important for proper maintaining and establishment of a learning environment that is in line with a student-centered approach that emphasizes on the use of ICT in education. Use of ICT for teaching and learning has a positive impact on the learners' achievement Aleksander (2012). The school principals are also seen as instruction and curriculum leaders and are considered as central figures by stakeholders in leading the process for creating the necessary conditions to learn and teach with ICT. The knowledge possessed by the school principals in the use of ICT is important as a diverse understanding of the various dimensions of ICT be it administrative, social, curricular, financial and technical dimensions of ICT will lead to effective and sustainable integration of ICT programmes (Kidombo et al 2012)

2.5. Influence of technical support on implementation of strategic plans

Technical Support refers to provision of help to people who use f technology products such as, software computers products and other ICT devices. As indicated by Jones (2004), failure of a computer may cause significant interruptions when ICT equipment is being used. If there is no technical assistance, the result effect is that users of ICT will shy away from using the computers because the ICT equipment might fail and no one would be available to give them some technical assistance when the problem arises.

When evaluating the processes involved in technology integration in the education system in Turkey, Yilmaz (2011) established that providing secondary schools with hardware, enough software and ample connection to the internet was important. He also established that for schools to have a sustained use of ICT for teaching and learning, it was essential to repair and properly maintain the ICT resources. To effectively do that he established that it was essential to provide the schools with enough technical support. Therefore, lack of technical support for teachers may lead to frustration and hence reluctance to utilize ICT (Trinidad and Tong, 2005).

Granger (2002) also evaluated 4 schools in an effort to establish the factors that contribute to effective application of ICT by the teachers. From the findings of the study, it was established that successful implementation does not need computers only but also technical support and commitment from the users. Technical support and commitment were found to be closely interlinked. For technical support of ICT integration in teaching and learning

to be effective the school must have a strategy for maintenance and renewal of ICT equipment.

A study by Kidombo et al (2012) found that out of 10 schools only 50% had a strategy for maintenance and repair of ICT equipment while the other half had not put in place proper repair and maintenance programme. Only 20 percent had a well-placed programme that partnered with an organization that is supported by the government and its mandate is to equip schools in Kenya with renovated computers and also maintain them. Another school solely relied on the computer teacher for the maintenance of the computers. The teacher also advised the management of the school to hire an expert if the problem encountered was beyond his/her ability. As a result of those extra duties, workload of the ICT teacher increased tremendously and could not carry out their teaching duties effectively.

Husing and Korte (2007) carried out a research study that established that most schools in European nations have put in place proper technical support to help teachers to assimilate technology into activities that are carried out in schools and as a result help in attainment of the goals. The technical support they give is informed by the notion that ICT support in schools determine whether teachers apply ICT in classrooms without time wastage when trying to solve the hardware and software problems by themselves.

2.6. Summary of literature review

Several studies on use of ICT in secondary schools have shown that ICT utilization in secondary schools is still limited (Manduku, 2012). Oliver (2009)

also noted that use of ICT to implement strategic plans in the education sector has not been as robust as other sectors such as business and industry. Failure to use the ICT resources effectively is due to different causes as indicated from the review of literature. Inadequacy of ICT resources has been identified by different researchers as an impediment to the effective utilization of ICT in different institutions (Hennesey et al, 2010). To use ICT effectively to achieve strategic plans in secondary schools also requires that the users of ICT are endowed with the right skills and competencies. Teachers and principals should be trained effectively on the use the various ICT facilities in school.

Research also indicates that the policies influence utilization of ICT in schools to implement the stipulated strategic plans (Kozma, 2003). Technical support also ensures that utilization of the ICT resources goes on uninterrupted thus contributing to the strategic plan implementation in the schools. That Kenya has made huge investments in ICT in education including equipping schools with ICT resources and equipping teachers with skills through training is an important step towards effective utilization of ICT in education. However it is important to note that no research has been done to determine the ICT related factors that influence the level of implementation of strategic plans in public secondary schools in Kasarani Sub County hence the study.

2.7. Theoretical framework

The study was based on the systems theory. This theory was initially advanced by Ludwig Von Bertalanffy in 1956 in which a country's education system is viewed as a complex organization composed of multiple interconnected sub-

systems which work towards achieving a common purpose/ goal. If changes occur in a certain part of the subsystem, then there are implications in another part of the system and sometimes the change happen in unanticipated ways.

This theory was important to this study as the Introduction of ICT has great implications on different aspects of the school system, it has implications on the training of teachers, on the curriculum, school policy and how the school utilizes its budget to meet the strategic plans of the school. The interwoven nature of the different subsystems may hinder the attainment of the goals of the school if one of the subsystems is frustrated. It therefore becomes a necessity to understand the role each subsystem plays in an effort to have ICT resources utilized effectively and efficiently to implement the schools strategic plans.

2.8. Conceptual Framework

Interrelationship between the independent and dependent variables of the study are shown in the conceptual framework below.

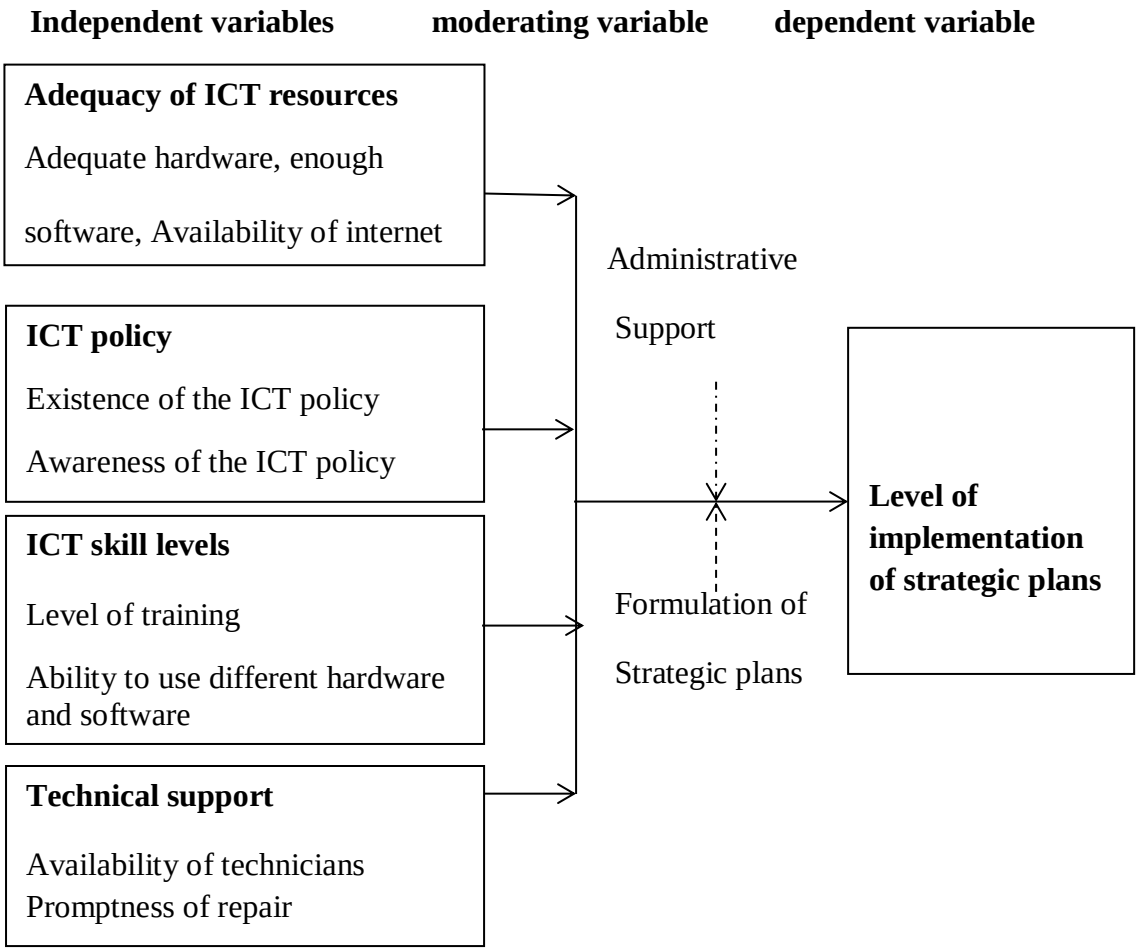

Figure 2.1 Diagrammatic representation of ICT related factors that influence utilization of ICT in secondary schools.

The model shows the relationship between the dependent and independent variables. Provision of adequate ICT resources, the right ICT policies, equipping the teachers with the right ICT skills and provision of technical support in schools goes a long way in influencing the implementation of strategic plan in the schools. The moderating variable is the availability of

administrative support in drawing of a strategic plan while the dependent variable is implementation of strategic plans using ICT.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter provides an explanation of the research procedures that were employed in this study. The following sub-headings were used to present the research procedures used in the study: Research design, the target population, sample size and sampling procedures, research instruments, data collection procedures, methods used in analyzing the data and ethical considerations.

3.2. Research design

The study used the descriptive survey design to collect relevant information. According to Best and Kahn (2007), the design is useful in gathering and analyzing information on the prevailing conditions for purposes of developing knowledge. The design allows the researcher to generalize the findings from a sample to a wider representation of the population. In respect to this study, this design was ideal in obtaining information on how adequacy of Resources, ICT skills among teachers, ICT policy in school and technical support availability influence on the use of ICT in implementation of strategic plans

3.3. Target population

Mugenda and Mugenda (2009) define a population as the complete group of events, individuals, or objects with some common characteristics. This study targeted 12 principals in 12 public secondary schools in Kasarani Sub County, 280 teachers and 1306 form three students in public secondary schools in

Kasarani Sub County as respondents. (Education office, Kasarani Sub County, 2016)

3.4. Sample size and Sampling Procedures

Sampling is a study procedure used for selecting a given number of people from a target population as representatives of that target population. From the target population, the number of students to take place in the study was found using a table by Krejcie and Morgan (1970). From the table, 297 students will be selected as respondents from the 12 schools. The schools in the study were stratified as Extra County, county and sub county schools. Thereafter, selection of schools from each stratum was done using simple random sampling. Mugenda and Mugenda (2009) notes that 30% is adequate for population below 1000; therefore, 84 teachers were sampled to take part in the study. Census design will be used for the school principals.

3.5. Research Instruments

The questionnaire was used by the researcher as a main data collection instrument. The questionnaire helps the researcher to gather a great amount of information within a short time (Orodho, 2009). The researcher administered questionnaires to the teachers and students. The questionnaire for teachers solicited information on use of ICT in secondary school. The student questionnaire helped the researcher establish the extent to which students utilized the ICT resources in school. The researcher used an interview guide for the principals to help shed more light on all the aspects under consideration in the study.

3.6. Validity of the instruments

Validity of an instrument refers to the extent to which an instrument measures what it is intended to measure (Orodho 2009, Mugenda 2009). The researcher conducted a pilot study to test for content validity of the research instruments. Consultations with the supervisor also helped to determine content validity.

3.7. Reliability

Mugenda and Mugenda (2009) explained that reliability is the measure of the degree to which a research instrument yields consistent results after repeated trials. To assess the reliability of the data collected, the researcher employed the test-retest method where the instruments were administered two times to similar subjects. The researcher then used Pearson's product moment correlation to establish the consistency of the responses from the respondents. Pearson product moment correlation co-efficient is given by the formula

$$r_{xy} = \frac{N\sum XY - (\sum X \sum Y)}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (\sum Y)^2]}}$$

Where:

Σ XY = sum of the product of paired x and y scores

Σ X^2 = sum of the squared x score

Σ X = sum of the x score

Σ Y^2 = sum of the squared y scores

Σ Y= sum of the y score

N = number of paired scores

The value of the correlation co-efficient falls between -1 and +1, the closer the value to ±1 the stronger the relationship. Orodho (2009) asserts that a reliability of 0.7 and above qualify an instrument to be used in a study. Hence if a coefficient of about 0.7 is found then it will be high enough to judge the reliability of the instrument but if it will be less than 0.7 the instrument will be revised to enhance its reliability. Therefore for this study the instrument's reliability yielded a correlation coefficient of 0.806 which was quite reliable for the study.

3.8. Data collection techniques

After the researchers' proposal got the approval, an introduction letter was obtained by researcher from the University to enable the researcher seek a research permit from National Commission for Science Technology and Innovation (NACOSTI). After getting a permit from NACOSTI the researcher sought permission from Kasarani Sub County Education Officer who also provided the researcher with list of public schools in Kasarani Sub County. The researcher went ahead to visit the sampled schools and booked appointments meant for data collection from the school principals.

3.9. Data analysis techniques

Orodho (2009) described data analysis as searching and arranging of data collected from the study in groups or classes on the basis of common characteristics. The researcher categorized the responses into themes as per the objectives of the study, coded them and analyzed the data by means of version 20 of the Statistical Package for Social Science (SPSS). Descriptive techniques such as frequencies and percentages were used by the researcher to

analyze any quantitative data collected. The analyzed data was presented in tables where applicable. Spearman's correlation was utilized by the researcher to establish the relationship between the independent and dependent variables.

3.10 Ethical considerations

The researcher obtained permission from the relevant authorities before heading to start data collection in the field. The researcher ensured that personal biases and opinions did not get in the way of the research. Before the respondents were requested to complete the questionnaires, the researcher ensured that a proper explanation of the purpose of the research was given.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND PRESENTATION

4.1. Introduction

This chapter presents analysis, presentation and interpretation of data collected around the objectives that the researcher intended to achieve. These objectives were; To establish the influence of adequacy of Information Communication and Technology resources on implementation of strategic plans, to establish how Information Communication and Technology policies influence strategic plan implementation, to assess in what way teachers' skill level in Information Communication Technology influences strategic plans implementation and to establish how technical support in the use of Information and Communication Technology influences implementation of strategic plans in public secondary schools in Kasarani Sub County

Frequencies and percentages of the main findings are presented in tables and figures. Discussions and summaries from the principals' structured interview have also been used to complement the data collected from questionnaires issued to the teachers and students.

4.2 Questionnaire response rate

Of the 297 questionnaires given to the students, 240 were responded to. This was a return rate of 80.8 percent. Out of the 84 questionnaires that were given to the teachers, 70 were responded to and were accepted for analysis representing a return rate of 83.3 percent. All the 12 principals from the 12 sampled schools gave their responses in the interview schedule which

represented a 100 percent response rate of. Mugenda and Mugenda (2003) noted that a response rate of 70 percent was considered statistically acceptable therefore the responses from the teachers, students and principals were therefore acceptable. .

4.3. Demographic information of the respondents

The first part of the teachers' questionnaire required that teachers provide important information concerning their age, gender, highest academic qualification and teaching experience. On the part of students, the only demographic information sought was gender. The respondents provided the required information accordingly and the data was analyzed using frequencies and presented in the tables.

4.3.1 Distribution of teachers by gender

The researcher wanted to find out the respondents' gender of in order to find out different opinions held by different gender on ICT related factors that influence strategic plans implementation in public schools in Kasarani Sub County. Figure 4.1 shows data collected on gender of the respondents.

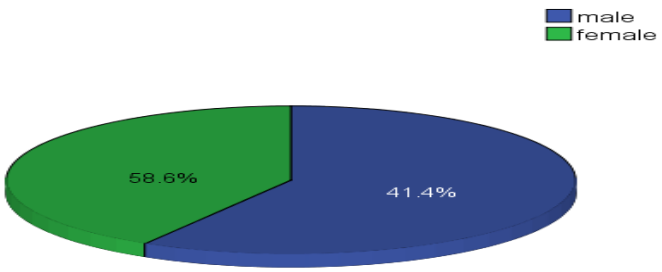

Figure 4.1 Distribution of teachers by gender

Figure 4.1 shows that the majority (58.6%) of the teachers who responded to the questionnaires were male. This could be an indication that there are more male teachers in public secondary schools in Kasarani sub County as compared to female teachers. The figure also indicates that teacher responses on the level of strategic plan implementation cuts across all the gender of the teachers.

4.3.2 Distribution of students by gender

The researcher established the distribution of students by their gender. The findings are indicated in table 4.1

Table 4.1 Distribution of students by gender

	Frequency	**Percent**
Male	96	40.0
Female	144	60.0
Total	**240**	**100.0**

Table 4.1 shows that the majority of the student respondents, 60.0 percent were girls. This is not surprising since most schools in Kasarani are mixed while most of the single gender schools are girls' schools. This also implies that student responses on the level of strategic plan implementation cuts across all the gender of the students.

4.3.3 Distribution of teacher respondents by age

The researcher further sought to establish the age of ICT users. This was important as the researcher required to incorporate the views of different age groups since age can influence how ICTs are utilized to implement strategic plans. Table 4.2 shows the responses given by the teachers.

Table 4.2 Distribution of teachers by age

	Frequency	**Percent**
21-25years	9	12.9
26-30years	13	18.6
31-35years	19	27.1
36-40years	19	27.1
Over 40years	10	14.3
Total	**70**	**100.0**

Table 4.2 indicates that the majority (68.6 %) of all the teachers teachers who participated in the study indicated that they were aged 31 years and above. This implies that most of the teachers who gave their responses were mature with only 12.9 percent being 25 years and below.

4.3.4 Distribution of teachers by academic qualifications

The other variable of interest to the researcher was to establish whether academic qualifications of teachers influence the implementation of strategic plans in public secondary schools. The responses from teachers are shown in Table 4.3

Table 4.3 Academic qualifications of the teacher respondents

	Frequency	Percent
Postgraduate diploma in education	11	15.7
Masters	6	8.6
Diploma	3	4.3
B.Ed.	50	71.4
Total	**70**	**100.0**

The data presented in Table 4.3 indicates that the majority (95.7%) of the teachers who took part in the study are bachelor of education degree holders and above. This implies that most of the teacher respondents were well qualified to take part in the study. The findings also indicate that only a few of the teachers had a diploma in education. This finding can be explained by the fact that many diploma teachers have pursued advanced education in a bid to get better pay from the government.

4.3.5 Distribution of teachers by teaching experience

The other variable of concern to the researcher was the teaching experience of the respondents with the aim of establishing whether teachers had long years of teaching experience. This data would also help to establish whether the number of years of teaching had an influence on their responses on the ICT factors that influence implementation of strategic plans. Table 4.4 presents data on teaching experience of teachers.

Table 4.4 Teaching experience of the teacher respondents

	Frequency	Percent
1-5years	28	40.0
6-10years	17	24.3
11-15years	6	8.6
16-20years	9	12.9
Over 20 years	10	14.3
Total	**70**	**100.0**

From table 4.4, the researcher observed that the majority (64.3%) of the teachers have a teaching experience of between 1 and 10 years. While few years of teaching experience may imply that teachers are yet to learn the ropes of the education sector, in this case it could mean that the teachers are quite young received training when ICT had been introduced in most teacher training colleges meaning teachers have received adequate ICT skills.

4.4 Information communication and Technology and its influence on strategic planning

The dependent variable of the study was the level of strategic plans implementation in public secondary schools. The level of implementation was analyzed in relation to aspects of the strategic plan such as financial management, academic achievement and management of physical resources within the school. Since the researcher was focused on the level of implementation of strategic plans in public secondary schools, it was important to establish the existence of a strategic plan in the schools. The

researcher therefore sought to find out from the respondents whether their schools had strategic plans. The responses from the teachers and the students are presented in Table 4.5

Table 4.5 Teachers' and students' responses on the presence of a strategic plan

	Students		teachers	
	Frequency	**Percent (%)**	**frequency**	**Percent (%)**
Yes	70	100	224	93.3
No	0	0	16	6.7

Table 4.5 indicates that 100 percent of the teachers noted that their respective schools had come up with elaborate strategic plans to guide on how different objectives, goals and strategies in the school were to be achieved. This, to the researcher, was an indicator that most schools in Kasarani Sub County had complied with the directive articulated in the Ministry of education circular; MOE/PLAN POLICY/NO.12/04/2013 that directed all secondary schools to establish strategic plans. This finding was also important to the researcher as the study was solely based on existence a strategic plan in public secondary schools in Kasarani Sub County.

Table 4.5 goes on to capture the responses of the students on the existence of a strategic plan in their schools. 93.3 percent of the students indicated that their schools had strategic plans that clearly stated what their schools wanted to

achieve in form of goals and objectives. However, 6.7 percent of the students reported that their schools did not have elaborate strategic plans.

There was a slight disparity on how the teachers and the students responded to the question on existence of a strategic plan. While 100 percent of the teachers said that the schools had a strategic plan, some students (6.7%) did not think it existed. This disparity could be attributed to lack of understanding of what strategic plans are on the part of the students. The responses from the principals corroborated what had been reported by the teachers in indicating that all their schools had goals and objectives that were well laid out in a strategic plan. One of the principals indicated.

> "*Being a requirement by the ministry of education, my school has established a strategic plan with properly laid out goals and objectives to guide the school for the next five years"*

4.4.1 Targeted utilization of ICT in line with strategic plans

Since the researcher's focus was on the ICT related factors that influence the strategic plan implementation in public secondary schools, the researcher sought to establish whether different schools in Kasarani Sub County had factored ICT use in implementing strategic plans in the secondary schools. The researcher asked the teachers to respond to a question on whether strategic plans had incorporated use of ICT to implement the strategic plans in regards to financial management, academic achievement and management of physical resources. Responses by learners and teachers are presented in Table 4.6

Table 4.6 Teachers' and students' response on targeted use of ICT

	Teachers		Students	
	Frequency	**Percent (%)**	**Frequency**	**Percent (%)**
Yes	70	100.0	185	77.1
No	0	0	55	22.9

Table 4.6 shows that 100 percent of the teachers in public secondary schools in Kasarani Sub County indicated that indeed most of their schools had made utilization of ICT a great priority in achieving their strategic plans. 77.1 percent of the student respondents also indicated that their respective schools had made the use of ICT to implement strategic plans a great priority.

In their responses to the interview question on targeted use of ICT to attain strategic plans, principals also reported that their schools had a specific focus on utilizing ICT to help in implementing various aspects of strategic plans including financial management, academic performance and management of physical resources. One principal noted that;

> "*We use computers to keep important financial records that help keep tabs on the ongoing projects in the school as per the strategic plan. On management of physical resources, the school uses ICT to maintain proper records of school supplies such as books and stationery. The school also uses ICT for teaching in classrooms as a result we have seen*

the learners being more engaged in the learning process and we have also seen improve academic performance of the learners."

This finding is in line with that Muchiri (2014) who in study to establish the extent to which public schools had integrated ICT in administration established that schools in Kiambu County used ICT for financial management, improvement of academic performance and management of physical resources as per their strategic plans.

4.4.2 The extent of Implementation of strategic plans in public secondary schools.

The researcher also sought to determine the extent to which secondary schools in Kasarani Sub County had implemented various aspects of their strategic plans. A special focus was placed on different aspects of the strategic plan which includes financial management, academic achievement and management of physical resources in the schools. The teachers were asked by the researcher to respond a four point scale starting from large extent, somewhat, very little and not at all. The responses from teachers on the various aspects are shown in Table 4.7.

Table 4.7 Extent of implementation of strategic plans in regards to financial management, academic achievement and management of physical resources

	Financial management		Academic achievement		Management of physical resources	
	Frequency	**Percent (%)**	**Frequency**	**Percent (%)**	**Frequency**	**Percent (%)**
Large extent	19	27.1	25	35.7	45	64.3
Somewhat	51	72.9	45	64.3	0	0
Very little	0	0	0	0	25	35.7
Not at all	0	0	0	0	0	0
Total	**70**	**100**	**70**	**100**	**70**	**100**

Table 4.7 shows that majority of the teachers (72.9%) indicated that implementation of strategic plan in regards to financial management had been done to a moderate extent. What this meant is that most of the schools that took part in the study utilized ICT to perform various activities related to financial accountability. These activities as stated by the principals included; keeping records of students' fees, keeping tabs on the schools' expenditure on the various projects stated in the strategic plans.

Teachers responses on the extent of implementation of strategic plans on academic achievement also presented in table indicated that most of the

teachers (64.3%) reported that their targets on academic achievement in their schools have been implemented to a moderate extent. What this meant is that the schools have made significant steps towards integrating ICT to teaching and learning in a bid to improve their academic performance as per their strategic plans. The principals also indicated that while some of the plans that had been made by the schools in regards to academic achievement of students in their respective schools had been achieved, some had not been achieved. Table 4.7 further indicates that majority the teachers (64.3%) were of the opinion that strategic plans on proper management of physical resources had been implemented to a very large extent while (35.7%) were of the opinion that very little was done to implement strategic plans on management of physical resources.

4.5 Adequacy of ICT resources and level implementation of strategic plans in public secondary schools

The first objective of this study was to establish the extent to which adequacy of ICT resources influences the implementation of strategic plans in public secondary schools in Kasarani Sub County. To achieve this objective; the researcher sought the respondents opinion on whether certain resources were in adequate supply in their respective schools. The findings are presented in table 4.8

Table 4.8 Teachers' responses on availability of different ICT resources

ICT resource	Adequate		Fairly adequate		Inadequate		Not available	
	F	%	F	%	F	%	F	%
Computers	20	28.6	46	65.7	4	5.7	0	0
Computer laboratories	20	28.6	43	61.4	0	0	7	10
Projectors	10	14.3	31	44.3	22	31.4	7	10
Internet	17	24.3	47	67.1	6	8.6	0	0
Scanners	17	24.3	19	27.1	21	30	13	18.6
Printers	17	24.3	28	40	25	35.7	0	0
Laptops	16	22.9	17	24.3	12	17.1	25	35.7
Photocopiers	35	50	26	37.1	9	12.9	0	0
Software	7	10	44	62.9	19	27.1	0	0

The findings from table 4.8 indicate that most of the teachers were of the opinion that Information Communication and Technology resources in their respective schools were fairly adequate. However it is important to note that (50%) of the teachers were of the opinion that their schools had adequate number of photocopiers.

Further findings show that majority of the teachers (67.1%) were of the opinion that their schools had provided internet to a fairly adequate extent. This information was also emphasized by the principals some of whom indicated that their schools had collaborated with some service providers to ensure availability of internet in their respective schools. Further, the findings indicate that majority of the teachers (35.7%) were of the opinion that their schools did not have laptops that could be used for research, instruction and other administrative duties by the teachers. Most of the teachers also stated that they found that the resources available were useful in helping them implement different plans that the school had in place.

The researcher went further to ask students to indicate the level of adequacy of ICT resources in their respective schools. The students responded to whether the resources were adequate, fairly adequate, inadequate and not available. Codes were assigned to the various responses the codes were: 1- adequate, 2- fairl adequate, 3- inadequate and 4 not available. Table 4.9 presents students' responses on adequacy of ICT resources.

Table 4.9 Students' responses on the adequacy of ICT resources public secondary schools

ICT resource	Adequate		Fairly adequate		Inadequate		Not available	
	F	%	F	%	F	%	F	%
Computers	57	23.8	151	62.9	32	13.3	0	0
Computer laboratories	62	25.8	87	36.3	67	27.9	24	10
Projectors	32	13.3	111	46.3	89	37.1	8	3.3
Internet	64	26.7	73	30.4	54	22.5	49	20.4
Scanners	38	15.8	59	24.6	64	26.7	79	32.9
Printers	78	32.5	87	36.3	56	23.3	19	7.9
Laptops	62	25.8	87	36.3	67	27.9	24	10
Photocopiers	62	25.8	60	25.0	91	37.9	27	11.3
Storage devices	76	31.7	86	35.8	56	23.3	22	9.2

Table 4.9 shows that the majority of responses made by the students in regard to the availability of ICT resources show that most of the ICT resources are fairly adequate in their schools. Of all the ICT facilities in the school, computers had the highest (62.9%) stating that they are fairly adequate. However, some felt that some ICT resources were not adequate.

The researcher's main concern was to establish the influence of adequacy of ICT resources on the level of implementation of strategic plans in Kasarani Sub County. To examine this influence, the researcher carried out an analysis using spearman correlation to establish the relationship between adequacy of ICT resources and implementation of different aspects of the strategic plans including financial management, management of physical resources and academic achievement. The findings are indicated in the tables

Table 4.10 Relationship between adequacy of ICT resources and the level of implementation of strategic plans

Financial management	Correlation coefficient	.321
	Sig. (2-tailed)	.007
Academic achievement	Correlation coefficient	.606
	Sig. (2 tailed)	.006
Management of physical resources	Correlation coefficient	.218
		.009

Table 4.10 Indicates that there is a statistically significant positive relationship between adequacy of ICT resources and the level of implementation the financial aspect of the strategic plans ($r=.321$, $p<0.05$). However, the relationship is weak. The weak relationship could be due to the lack of use of the already existing ICT resources in the public secondary schools in Kasarani Sub County. The weak relationship could also be attributed to lack of inadequacy of some resources.

The researcher went ahead to find the spearman's correlation to establish the relationship between adequacy of ICT resources and implementation of strategic plans in regards to academic achievement as shown in Table 4.10. There is a statistically significant positive correlation between adequacy of ICT resources and implementation of strategic plans in regards to academic achievement in public secondary schools in Kasarani Sub County ($r=0.606$, $p<0.05$). This finding is an indicator that the more ICT resources are available in public secondary schools, the more they can be used to achieve the laid down plans for the academic achievement of the students. For this reason, schools should strive to have the necessary resources to ensure that all their academic plans are attained.

Still on adequacy of ICT, the researcher sought to find out how adequacy of ICT resources influenced implementation of strategic plans in regards to management of physical resources. Table 4.10 indicates that there is a positive correlation of ($r=0.218$, $p<0.05$) between adequacy of ICT resources and implementation of strategic plans in public secondary schools in Kasarani Sub County.

4.6 Information Communication and technology policies and implementation of strategic plans

In the second objective of this study, the researcher sought to establish the extent to which implementation of strategic plans is influenced by the presence of Information Communication Technology policies in public schools. To achieve this, the researcher sought the respondents' opinion on

whether there existed ICT policies in secondary schools and whether they were aware of any details of the policies in their schools. The researcher proceeded further to enquire on whether the existence of such policies had a bearing on implementation of strategic plans in their schools. The responses are shown in Table 4.11

Table 4.11 Teachers' responses on the presence of ICT policies in public secondary schools

	Frequency	**Percent**
Yes	66	94.3
No	4	5.7
Total	**70**	**100.0**

Table 4.11 indicates the majority of the teachers, 94.3 percent were of the opinion that their schools had put in place elaborate Information Communication and Technology policies to guide in utilization of the available ICT resources. This was an indicator that schools had put in place measures to ensure that the available ICT resources are utilized. The researcher was also interested in finding out whether teachers were aware of what the ICT policies entailed; the researcher asked the teachers to indicate whether they were aware of the details of the ICT policy in their schools. Their responses are shown in table 4.12

Table 4.12 Teachers' responses on whether they are aware of the details of the ICT policies in their schools

	Frequency	Percent
Yes	57	81.4
No	13	18.6
Total	**70**	**100.0**

Table 4.12 shows that the majority (81.4%) of the teachers are aware of the details of the details of the ICT policies in their schools. That being the case, it means that most teachers understand what is expected of them when it comes to the use of ICT to perform various tasks in their schools in order to achieve the laid out plans for the school. To corroborate this information from teachers, the researcher sought the same information from the principals who affirmed that most of the schools had elaborate ICT policy guidelines to guide the use of ICT in implementing various aspects of the strategic plans in their respective schools. One of the principals had this to say;

> "*The school has a clear policy on how the ICT resources should be utilized by teachers, students and non-teaching staff to ensure that the goals, strategies and objectives are implemented as per our strategic plan*"

Responses from the students on whether the school had elaborate policies on ICT use in their schools are presented in Table 4.13

Table 4.13 Students' responses on the presence of ICT policies in their schools

	Frequency	Percent
Yes	194	80.8
No	46	19.2
Total	**240**	**100.0**

Table 4.13 shows that the majority (80.8%) of the students reported that their schools had put in place elaborate ICT policies to ensure that strategic plans are achieved. This finding agrees with Karagiorgi and Charalambousm (2004) who opine that decentralized policies in any institution are a very vital recipe to ensure the objectives of the institution are achieved with ease.

The data on availability of ICT policies in schools was analysed using spearman's correlation co efficient to establish whether there exists a relationship between presence of Information Communication and Technology policies and implementation of different aspects of strategic plans which include financial management, management of physical resources and academic achievement in public secondary schools in Kasarani Sub County. The findings are presented in Table 4.14

Table 4.14 Relationship between ICT policy and implementation of strategic plans

Financial management	Correlation coefficient	.403
	Sig. (2-tailed)	.001
Academic achievement	Correlation coefficient	.683
	Sig. (2 tailed)	.000
Management of	Correlation coefficient	.383
physical resources		.000

From table 4.14, the researcher observed that the correlation co efficient between presence of ICT policy and implementation of strategic plans in regards to financial management in the schools was ($r= 0.403$, $p<0.05$). This correlation co-efficient indicates that there exists a significant positive relationship between the presence of an ICT policy and level of implementation of strategic plans. However the relationship is relatively weak. The weak relationship could be due to lack of proper enforcement of enforcement of the laid down policies or even lack of proper understanding of the laid policies that the school has put in place to ensure proper use of the available ICT resources.

The researcher went further to establish whether there was a significant relationship between implementation of strategic plans in regards to academic achievement as shown in table 4.14. The table indicates a correlation co-efficient of ($r= 0.683$, $p<0.05$) which implies that there is a statistically significant strong relationship between presence of ICT policy and

implementation of strategic plans that focus on the students' academic achievement in public secondary schools in Kasarani Sub County.

The researcher also indicated that there is a positive relationship (r=.383, p<.005) between ICT policy and implementation of strategic plans in regards to management of physical resources within schools in Kasarani Sub County.

4.7 Teachers ICT skills and its influence on level of implementation of strategic plans

The third objective that the researcher sought to achieve was to establish the influence of teachers ICT skills on the implementation of strategic plans in public secondary schools in Kasarani Sub County. To achieve this objective, the researcher asked the respondents to state their level of ICT training and to state how the level of training has equipped them with skills to help in implementing strategic plans. The responses from the teachers on whether they are trained in ICT and their level of training are presented in Table 4.15

Table 4.15 Teachers' responses on whether they are trained on ICT and their level of training

	Level of training		
Trained in ICT	**Computer packages**	**Certificate**	**Diploma**
Yes	34	19	10
	48.6%	27.1%	14.3%
No	7	0	0
	10%	0%	0%
Total	**58.6%**	**27.1%**	**14.3%**

Table 4.15 indicates that the majority (90%) of the teachers have some training in in Information Communication and Technology. Most (48.6%) of the teacher respondents who indicated that they had some training also indicated that they had received training in basic computer packages while only a few had been trained up to diploma level. The 10% of the teacher respondents who indicated that they had not had any training indicated that they had knowledge on basic computer packages such as use of Microsoft word, excel and power point. On this issue of ICT skills and training, the principals indicated that most of their teachers had adequate ICT skills to help them carry out various tasks expected of them in the schools.

The researcher asked the teacher respondents to indicate whether the skills they had acquired while on training had any effect on how they implemented

various aspects of the strategic plans. Table 4.16 shows teachers' responses on the relevance of ICT.

Table 4.16 Teachers' responses on relevance of ICT training

	Very relevant	**Relevant**	**Slightly relevant**	**Not relevant**
Financial management	22 31.4%	29 41.4%	15 21.4%	4 5.7%
Management of physical resources	32 45.7%	28 40.0%	6 8.6%	4 5.7%
Academic achievement	13 18.6%	53 75.7%	0 0%	4 5.7%

Table 4.16 shows that majority of the teachers were of the opinion that training had some relevance to the implementation of strategic plans. 72.8 percent, 85.7 percent and 94.3 percent were of the opinion that ICT training was relevant or very relevant in implementing strategic plans in regards to financial management, management of physical resources and academic achievement respectively.

All the principals indicated that they had some training in ICT and that they had taken different steps towards training the teachers to use Information Communication Technology for teaching and learning to enable them to meet the goals on academic achievement stipulated in the strategic plans in their schools.

The statement being tested by the researcher was the influence of ICT skills on the level of implementation of strategic plans in public secondary schools in Kasarani Sub County. Spearman's correlation co-efficient was used to achieve this. The findings are indicated in table 4.17

Table 4.17 Relationship between ICT skills on the implementation of strategic plans

Financial management	Correlation coefficient	.303
	Sig. (2-tailed)	.001
Academic achievement	Correlation coefficient	.603
	Sig. (2 tailed)	.008
Management of	Correlation coefficient	.423
physical resources		.004

Table 4.17 indicates a spearman correlation co efficient of ($r=0.303$, $p<0.05$) which shows that there exists a statistically significant positive correlation between teachers' ICT skills and implementation of strategic plans in regards to financial management as teachers need the skills so as to keep proper records of different expenditures within the schools.

On the influence of ICT skills on the implementation of strategic plans, a correlation ($r=.603$, $p< 0.08$) was found. This indicated statistically significant positive correlation between ICT skills and implementation of strategic plans in regards to academic achievement in public secondary schools. A statistically significant positive correlation ($r=.423$, $p<0.05$) was also found between ICT skills and implementation of strategic plans in regards to

management of physical resources. This finding agrees with Bordbar (2010), who was of the opinion that a teachers' skill in utilization can determine to a very great extent how ICT is utilized to achieve different plans in public secondary schools. This finding also agrees with Jones (2004) who opines that a teachers' competence determines how ICT is utilized in schools.

4.8 Influence of technical support in Implementation of strategic plans

The fourth objective that the researcher sought to achieve was to establish the influence of technical support on the implementation of strategic plans in public secondary schools in Kasarani Sub County. To achieve the objective, the researcher asked the respondents to indicate whether their schools had adequate technical support, the researcher also asked the respondents to sate how ICT resource are maintained in their respective schools. The responses from the various groups of respondents are captured in the tables 4.18

Table 4.18 Availability of technical support in public secondary schools

	Frequency	**Percent**
Yes	60	85.7
No	10	14.3
Total	**70**	**100.0**

From table 4.18, majority of the teachers (85.7%) indicated that users of ICT resources in their schools received technical support case there was a need for it. This means that there is an appropriate environment for teachers to utilize the available ICT resources effectively as any help required is readily availed to them. The researcher also asked the students whether there was any

technical assistance given to the learners every time there was a technical failure while using the ICT resources. The students' responses are summarized in a cross tabulation table 4.19

Table 4.19 Need for technical support and availability of technical support

	Frequency of technical support		
Timely repair	**Always**	**Often**	**Sometimes**
Yes	24	19	95
	17.4%	13.8%	68.8%
No	8	56	38
	7.8%	54.9%	37.3%
Total	**32**	**75**	**133**
	13.3%	**31.3%**	**55.4%**

Table 4.19, shows that the majority, 133 (55.4%), indicated that they needed technical support sometimes when using ICT facilities. Majority (68.8%) of those who indicated that they needed technical support sometimes also indicated that they received timely technical support from an able technician when they needed it. Only 13.3 percent of the students indicated that they needed technical support always. This shows that most of the equipment is of good quality and therefore does not breakdown often.

This finding supports what was indicated by the teachers that majority thought that technical support was available in their respective schools. This finding was also corroborated by the principals who confirmed that their schools had

either ICT teachers or trained technicians who would provide assistance to any ICT user in the school who needed it. One of the principals noted

> "*Our school has a technician who is always available to provide required support to students, teachers and non-teaching members of the school"*

The researcher was interested in determining the influence of technical support in the utilization of ICT to implement strategic plans in public secondary schools in Kasarani Sub County. To this effect, the researcher carried out a correlation. The results are shown in table 4.20

Table 4.20 Relationship between technical support and implementation of strategic plans

Financial management	Correlation coefficient	.304
	Sig. (2-tailed)	.005
Academic achievement	Correlation coefficient	.548
	Sig. (2 tailed)	.003
Management of	Correlation coefficient	.249
physical resources		.000

The findings from table 4.20 indicate that there is a positive correlation between all the aspects of the strategic plan and the availability of technical support. The correlation coefficient is highest ($r=0.548$, $p<0.05$) for management of physical resources. This can be attributed to the need for assistance when ICT is being used for management of physical resources in the public secondary schools in Kasarani Sub County.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter consists of different sections; a summary of the study, a summary of major findings from the study, conclusions that have been derived from the findings from the study, recommendations of the study that are derived from the findings and recommendations for future research that this study has failed to establish.

5.2 Summary of the study

The purpose of the study was to investigate Information, communication and Technology related factors that influence utilization of ICT in implementation of strategic plans in public secondary schools in Kasarani Sub County, Kenya. The research study was guided by four objectives which included; to establish the influence of adequacy of Information Communication and Technology resources on implementation of strategic plans in public secondary schools in Kasarani Sub County, to establish how Information Communication and Technology policy influences the implementation of strategic plans in public secondary schools, to assess how teachers' skill level in Information Communication Technology influences the implementation of strategic plans in public secondary schools, to establish how technical support in the use of Information and Communication Technology influences implementation of strategic plans in public secondary schools.

The study was based on the systems theory developed by Ludwing Von Bertalanffy (1956). The conceptual framework which shows the interrelationship between independent variable and dependent variable was presented. Descriptive survey design was used for the study. Questionnaires were the main instruments used to collect data from teachers and students. An interview guide was used for the principals. The questionnaires used were validated and tested for reliability. The study sample population comprised of 12 principals, 270 students and 84 teachers. From the sample' those who responded were 240 students, 70 teachers and 12 principals. The average response rate was 79.4 percent and was deemed appropriate and adequate for data analysis.

The sample was taken from all the 12 secondary schools in Kasarani Sub County. Data analysis was done using SPSS computer software version 21 because of its effectiveness and efficiency. Descriptive data analysis was used to determine frequencies and percentages of demographic characteristics of the respondents. Data were presented using tables and charts. Pearson correlation was used to analyse the four objectives. Qualitative data were organized into themes according to research questions and was analysed using descriptive narratives.

5.3 Discussion of findings

The study findings on how adequacy of ICT resources influence implementation of strategic plans in public secondary schools revealed that majority of the teachers who indicated that there were adequate photocopiers which were mostly used in examination administration. According to their

responses, teachers and principals indicated that most of the other resources such as computers, computer laboratories internet and software were fairly adequate. Students were of the opinion that their schools had fairly adequate ICT resources. According to the students, all the ICT resources that were considered in this study were fairly adequate save for computer laboratories, projectors and laptops. The findings of the correlation between adequacy of ICT resources and level of implementation of different aspects of the strategic plans show that there is a positive correlation. The highest correlation was implementation of strategic plans on academic achievement with a co efficient ($r=0.606$, $p<0.05$). Implementation of strategic plans on financial management had a correlation co efficient ($r=0.321$, $p<0.05$). The positive correlation implies that indeed adequacy of ICT resources has an influence on implementation of strategic plans.

The findings on the influence of ICT policies on the implementation of strategic plans show that majority of the teachers were of the opinion that their schools had put in place appropriate policies to ensure that ICT resources in their schools were utilized fully. This finding from the teachers was also similar to the finding from the students' majority who also indicated that their schools had put in place proper policies to incorporated ICT in many of its activities such as teaching and learning. 100 percent of the principals who were interviewed also indicated that their schools had established proper ICT policies in their schools.

The finding on the correlation between presence of ICT policies and level of implementation of strategic plans show a positive correlation for all aspects of the strategic plans

Finding on the influence of teachers skills on the implementation of strategic plans show that majority (90%) of the teachers are trained in Information Communication and Technology. Majority (48.6%) of the teacher respondents also indicated that they had received training in basic computer packages while only 14.3% had been trained up to diploma level. All the 10 principals who were interviewed had received ICT training. Further findings revealed that the most of the teachers found that the ICT training was relevant in equipping them with necessary skills to implement strategic plans in public secondary schools. Further findings on the correlation between teachers' ICT skills and level of implementation of strategic plan show that there is a positive correlation of 0.434. This finding is an indicator that teaches ICT skills influence the implementation of strategic plans in secondary schools.

The study established that majority of the teachers (85.7%) in public secondary schools in Kasarani Sub County noted that the school had readily available technical support whenever there was a technical failure or mechanical breakdown of any of the ICT resources available in the schools. Majority of the students (57.5%) were also of the opinion that they readily had technical support whenever they needed. There was also a positive correlation between technical support and implementation of strategic plans in Kasarani Sub County.

5.4 Conclusions

The researcher established that different factors can contribute to the attainment of strategic plans in public secondary schools. The researcher established that adequacy of ICT resources had an influence on the level of implementation of strategic plans in public secondary schools. This means that schools should ensure that there are adequate ICT resources to ensure that whatever plans they have laid are attained.

The researcher also concluded that presence of elaborate ICT policies in the schools had an influence on the level of implementation of strategic plans in public secondary schools. That means that schools that have put in place proper policies are likely to implement their strategic plans. The researcher also concluded that proper training of teachers in ICT can help them attain the laid down plans for the schools. The researcher also concluded that timely repair and

5.5 Recommendations

On the basis of the findings obtained from the study, the researcher made the following recommendations:

- The ministry of education should make it mandatory for secondary schools to put in place proper ICT policies with an aim of making use of ICT resources to implement the strategic plans that they have laid down for the school.
- Secondary schools should find other partners to provide funds for acquisition of more ICT resources. This will ensure the adequacy of

computers and other ICT resources in the schools so as to improve their use in for different purposes in the schools.

- There is need for more training opportunities for teachers in secondary schools in Kasarani Sub County. Therefore, teachers should be provided with regular trainings and refresher courses so that the teachers have adequate skills to enable them keep tabs with the changing technology and also find better ways of incorporating ICT to implement strategic plans in the schools.
- Not only should secondary schools in Kasarani Sub County partner with local computer experts to ensure that the schools have enough technical support but also the ministry of education should provide technicians to each school to ensure that computer users receive the help they need when using the computers and other ICT resources.

5.6 Suggestion for further research

The researcher suggested the following areas for further research based on findings derived from this study;

1. A comparative research of ICT related factors that influence implementation of strategic plans in secondary schools should be done across public and private secondary schools in other parts of the country so as to compare the similarities and differences.

2. Research should also be done on the Impact of Kenyan government ICT policies on implementation of secondary schools' strategic plans at national level

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Appendix I

INTRODUCTION LETTER

University of Nairobi,

Department of Educational,

Administration and Planning,

Box 30197 – 00100.

Nairobi.

The Principal

Dear Sir/ Madam

RE: DATA COLLECTION

I am a Masters Student at the University of Nairobi undertaking a research titled: "**Information Communication and Technology related factors influencing implementation of secondary schools strategic plans in Kasarani Sub County**." I seek your permission collect data concerning this topic

The information provided by the respondents will be used only for this research and their identity will not be divulged.

Thank you.

Yours faithfully,

Peter Gitau.

Appendix II

QUESTIONNAIRE FOR TEACHERS

The purpose of this study is to assess the level of utilization of ICT resources in the implementation of secondary schools strategic plans. Please give your views by filling in the blank spaces or putting a tick (√) in the spaces provided.

SECTION A: Background information.

1. What is your gender

   Male [ ] Female [ ]

2. What is your age?21 – 25 years [ ] 26 – 30 years [ ] 31 – 35 years [ ]

   36 – 40 years [ ] Over 40 years [ ]

3. What is your highest professional qualification?

   PhD [ ] PGDE [ ] Masters [ ] DIP [ ] B.Ed. [ ]

   Others (specify)……..

4. For how long have you been teaching?

   1 – 5 years [ ] 6 – 10 years [ ] 11 – 15 years [ ] 16 – 20 years [ ]

   Over 20 years [ ]

Section B. (I) Strategic plans

5. Does your school have a strategic plan

   Yes….. No……

6. Does the strategic plan target the use of ICT in the school?

   Yes….. No

7. To what extent has the school implemented its strategic plan in the following areas?

	Large extent	**somewhat**	**Very little**	**Not at all**
Financial management				
Academic achievement				
Management of physical resources				

8. What are the other areas addressed by the strategic plan and to what extent have they been implemented?

Area	**Large extent**	**somewhat**	**Very little**	**Not at all**

Section B ii) Adequacy of ICT resources and implementation of strategic plans

9. Indicate using a tick (√) whether the following resources are available in your school.

Resource	Adequate	Fairly adequate	Inadequate	Not available
Computers				
Computer laboratories				

Projectors				
Internet				
Scanner				
Printer				
Laptops				
Photocopier				
Storage devices				
Software				

Section B (iii): ICT policy and utilization of ICT

10. Does your school have an elaborate ICT policy

    Yes…….. No……..

11. Do you have any details of what the ICT policy entails?

    Yes… …… No……..

12. a) Does the school ICT policy address the following areas of the strategic plan?

    Financial accountability Yes [ ] No [ ]

    Academic achievement Yes [ ] No [ ]

    Management of physical resources Yes [ ] No [ ]

b) Kindly state other main areas of the strategic plan that are addressed by the ICT policy

……
……

Section B (IV): Teacher's ICT skill level and implementation of strategic plans

13. Are you trained in ICT? Yes [ ] No [ ]

14. What level of training did you receive?

Computer packages [ ] Certificate level [ ]

Diploma [ ] Degree [ ]

15. How relevant can you rate the training in terms of equipping you with skills to implement the strategic plan in the following areas?

	Very relevant	relevant	Slightly relevant	Not relevant
Financial management				
Management of physical resources				
Academic performance				

SECTION B (v): Technical support and utilization of ICT

16. Do you receive technical support when ICT system fails? Yes [ ] No [ ]

17. Who maintains the ICT equipment in your school?

18. In case a problem occurs with the computers or ICT resources, are they repaired promptly? Yes [ ] No [ ]

19. Which areas of the strategic plan are mainly affected by failure of ICT equipment?

    .....

Appendix III

INTERVIEW GUIDE FOR PRINCIPALS

This interview guide will be used to solicit information on the level of utilization of ICT resources in the implementation of strategic plans in secondary schools in Kasarani Sub County.

Interview Guide

1. Does your school have a strategic plan? What are the main areas addressed by the strategic plan?
2. Which ICT resources does the school have? Are they in adequate supply? Does the adequacy of the resources have any influence on how you incorporate ICT in the daily activities in the school?
3. Does the school have an ICT policy? How does the ICT policy address different targets in the strategic plan?
4. Are you trained on ICT use? Are the teachers in the school well trained to use ICT resources? How does the training equip the teachers in implementing the different areas addressed by the strategic plan you have in place?
5. In case of technical failure, how are ICT equipment maintained? Which areas addressed by the strategic plan is mainly hampered by technical failure of ICT equipment?

Appendix IV

QUESTIONNAIRE FOR STUDENTS

The purpose of this study is to determine ICT related factors that influence on implementation of secondary schools strategic plans. Please give your views by filling in the blank spaces or putting a tick (√) in the spaces provided

1. What is your gender? Male [ ] Female[ ]

2. Does your school have targets in different areas?

   Yes [ ] No [ ]

3. Is the use of ICT included in the targets that your school has?

   Yes [ ] No [ ]

Adequacy of ICT resources

4. Indicate using a tick (√) whether ICT resources mentioned below are available in your school.

Resource	Adequate	Fairly adequate	Inadequate	Not available
Computers				
Computer laboratories				
Projectors				
Internet				
Scanner				
Printer				
Laptops				
Photocopier				
Storage devices				

Software				

5. What are the main tasks performed using ICT resources in your school?

   ……

   ……

   ……

ICT policies and Implementation of strategic plans

6. Does the school have elaborate ICT policies to control how you use the ICT resources that are available? Yes [ ] No [ ]

Teachers' ICT skills and implementation of strategic plans

7. Do you receive instruction using ICT from teachers?

   Yes [ ] No [ ]

Technical support and Implementation of strategic plans

8. How often do you require support when using ICT resources in school? Always [ ] Often [ ] sometimes [ ]
9. When computers breakdown, are they repaired on time?

   Yes [ ] No [ ]

Appendix V

Table for determining the sample size of a finite population

Table 3.1

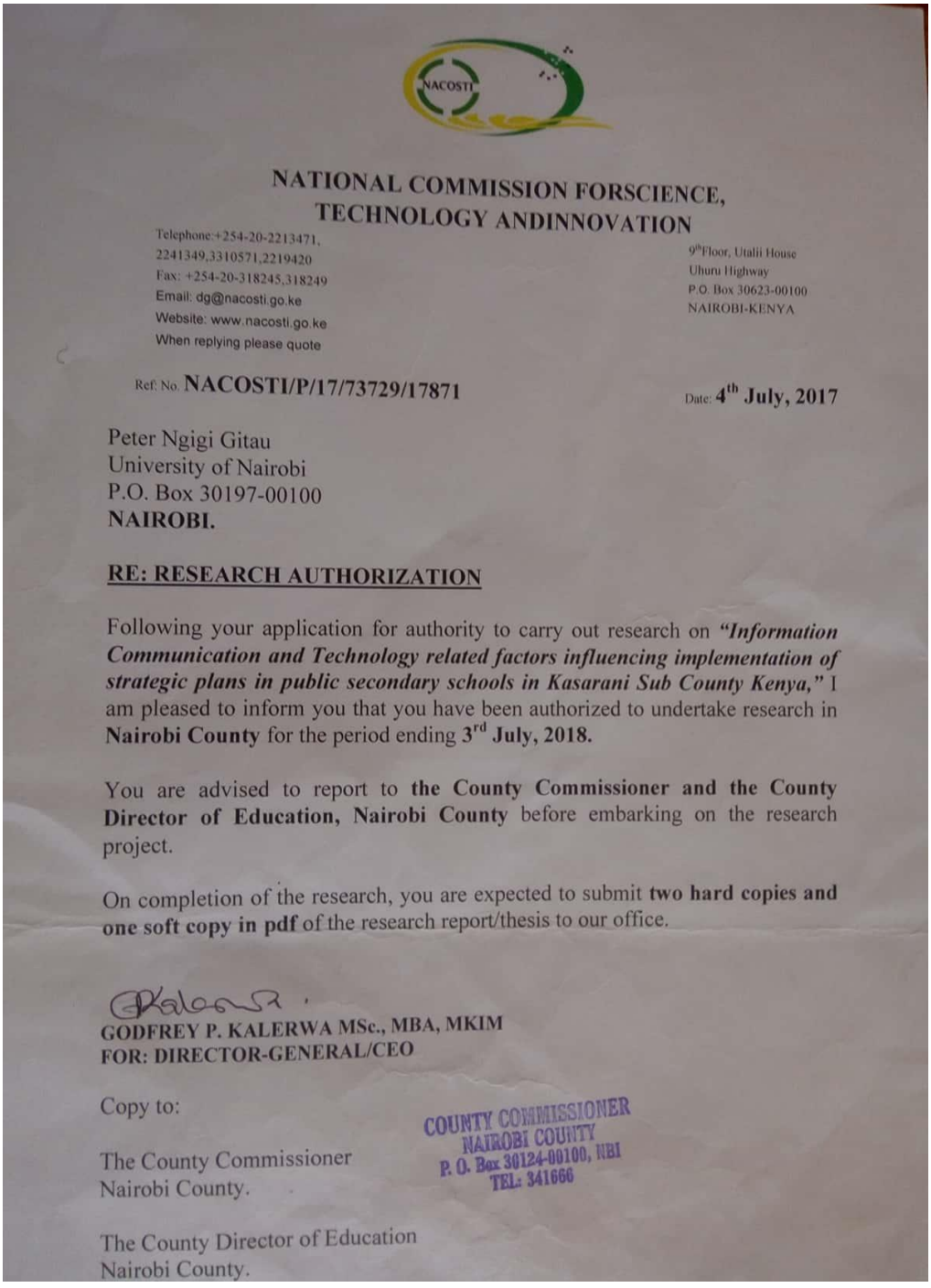
Table for Determining Sample Size of a Known Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

Note: N is Population Size; S is Sample Size *Source: Krejcie & Morgan, 1970*

APPENDIX VI

LETTER OF AUTHORIZATION



NATIONAL COMMISSION FORSCIENCE,
TECHNOLOGY ANDINNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax: +254-20-318245,318249
Email: dg@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. **NACOSTI/P/17/73729/17871**

Date: **4th July, 2017**

Peter Ngigi Gitau
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Information Communication and Technology related factors influencing implementation of strategic plans in public secondary schools in Kasarani Sub County Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **3rd July, 2018.**

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi 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.

GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

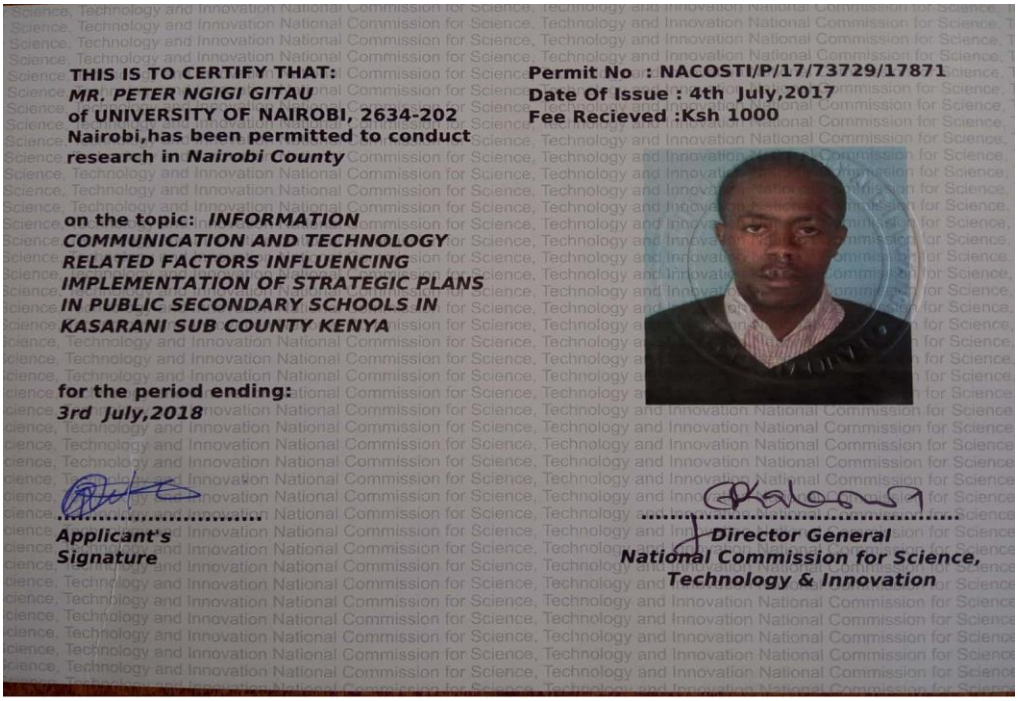
The County Commissioner
Nairobi County.

COUNTY COMMISSIONER
NAIROBI COUNTY
P. O. Box 30124-00100, NBI
TEL: 341666

The County Director of Education
Nairobi County.

APPENDIX VII

RESEARCH PERMIT



THIS IS TO CERTIFY THAT:
MR. PETER NGIGI GITAU
of UNIVERSITY OF NAIROBI, 2634-202
Nairobi,has been permitted to conduct
research in *Nairobi County*

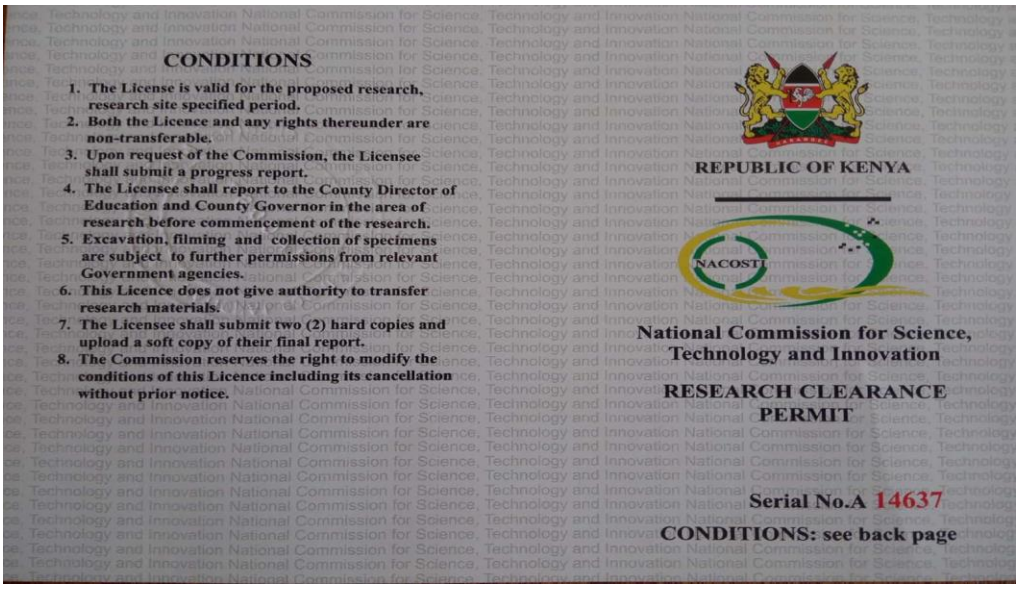
on the topic: *INFORMATION COMMUNICATION AND TECHNOLOGY RELATED FACTORS INFLUENCING IMPLEMENTATION OF STRATEGIC PLANS IN PUBLIC SECONDARY SCHOOLS IN KASARANI SUB COUNTY KENYA*

for the period ending:
3rd July,2018

Permit No : NACOSTI/P/17/73729/17871
Date Of Issue : 4th July,2017
Fee Recieved :Ksh 1000

.....
Applicant's Signature

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



CONDITIONS

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2. Both the Licence and any rights thereunder are non-transferable.
3. Upon request of the Commission, the Licensee shall submit a progress report.
4. The Licensee shall report to the County Director of Education and County Governor in the area of research before commencement of the research.
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REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No.A 14637

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