

**PRINCIPALS' CHARACTERISTICS INFLUENCING INTEGRATION OF
INFORMATION AND COMMUNICATION TECHNOLOGY IN
MANAGEMENT OF SECONDARY SCHOOLS IN MAKUENI 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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This research project has been submitted for examination with our approval as the university supervisors.

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DEDICATION

This research project is dedicated to my beloved parents Edward Mulonza and Phoebe Mutheu. Also to my siblings Mwende, Mbithe, Mambo, Kyama and Faith.

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TABLE OF CONTENT

Content	Page
Title page	i
Declaration	ii
Dedication	iii
Acknowledgements.....	iv
List of tables	ix
Abbreviations and acronyms	xi
Abstract	xii

CHAPTER ONE

INTRODUCTION

1.1 Background to the study	1
1.2 Statement of the problem.....	6
1.3 Purpose of the study.....	7
1.4 Research objectives	7
1.5 Research questions.....	8
1.6 Significance of the study	8
1.7 Limitation of the study.....	9
1.8 Delimitation of the study	9
1.9 Assumption of the study	9
1.10 Definition of significant terms.....	10
1.11 Organization of the study.....	10

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction.....	12
2.2 Concept of Information and Communication Technology and school management	12
2.3 Principals’ attitude towards ICT and ICT integration in management.....	14
2.4 Principals’ ICT literacy level and ICT integration in management of schools	16
2.5 Principals’ gender and ICT integration into management.....	19
2.6 Principals’ age and ICT integration in management	20
2.7 Summary of literature review	21
2.8 Theoretical framework.....	23
2.9 Conceptual framework.....	24

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction.....	25
3.2 Research design	25
3.3 Target population.....	25
3.4 Sample size and sampling procedure.....	26
3.5 Research instruments	27
3.6 Validity of instruments	28
3.7 Reliability of instruments	28
3.8 Data collection procedures	29
3.9 Data analysis techniques.....	29
3.10 Ethical considerations.....	29

CHAPTER FOUR
DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction.....	31
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4.2 Response rate	31
4.3 Demographic information.....	32
4.3.1 Gender of principals	32
4.3.2 Age of principals' and HODs	33
4.3.3 Principals' academic qualification in ICT	34
4.3.4 Gender of Heads of Departments	36
4.3.5 Length of service of HODs	36
4.3.6 Teachers' response on the availability of ICT tools in the school	38
4.4 Principals' attitude towards ICT and its integration in management	39
4.4.1 Principals' attitude towards ICT and its integration in curriculum and instruction areas of school management.	39
4.4.4 Principals' attitude towards ICT and its integration in financial school management	43
4.4.5 Principals' attitude towards ICT and its integration in school management.....	44
4.5 Principals' ICT literacy level and ICT integration in secondary school management	45
4.5.1 Principals' ICT literacy and its integration in curriculum and instruction areas of management	45
4.5.2 Principals' ICT literacy and ICT integration in student personnel management ...	47
4.5.3 Principals' ICT literacy and ICT integration in financial management	49
4.5.4 Principals' proficiency in computer programmes	50
4.6 Principals' gender and ICT integration.....	51
4.6.1 Principals' gender and ICT integration in curriculum and instruction area.	51
4.6.2 Principals' gender and ICT integration into student personnel management.....	53
4.6.3 Gender and ICT integration in staff personnel management	53

4.6.4 Principals' gender and ICT integration in financial management tasks.....	54
4.6.5 Teachers' response on principals who integrate ICT in school management	55
4.7 Age of principals and ICT integration	55
4.7.1 Principals' age and ICT integration in curriculum and instruction	56
4.7.2 Principals' age and ICT integration in student personnel management	57
4.7.3 Principals' gender and ICT integration in staff personnel management	58
4.7.4 Principals' age and ICT integration in financial management	58
4.7.5 Age bracket of principals accessing and using computers	59
4.7.6: Age bracket of principals mostly integrating ICT in management	60

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction.....	62
5.2 Summary of the study	62
5.3 Summary of the findings	63
5.3 Conclusions.....	66
5.4 Recommendations.....	67
5.5 Suggestion for further research.....	67

REFERENCES

APPENDICES

APPENDIX I: Letter of introduction.....	73
APPENDIX II: Questionnaire for principals	74
APPENDIX III: Questionnaire for heads of departments	76
APPENDIXES IV: Interview schedule for sub-county education officer.....	79
APPENDIX V: Research permit	80
APPENDIX VI: Research authorization letter	80

LIST OF TABLES

Table	Page
Table 3.1 Sample frame	26
Table 4.1: Distribution of principals' gender	33
Table 4.2: Distribution of principals' and HODs age.....	33
Table 4.4: Distribution of length of service of HODs	37
Table 4.5: Types of ICT in secondary schools	38
Table 4.6: Principals' confidence in using ICT tools and integration of ICT curriculum and instruction tasks	40
Table 4.8: Principals' attitude towards ICT integration and staff personnel management ...	42
Table 4.9: Principals' attitude towards ICT and its integration in financial school management	43
Table 4.10 Distribution of principals' attitude towards ICT	44
Table 4.11: Principals' literacy levels and ICT integration in curriculum and instruction tasks	46
Table 4.12 Principals' literacy levels and ICT integration in student personnel management	47
Table 4.13: Principals' ICT literacy and ICT integration in staff personnel management.....	48
Table 4.14 Principals' ICT literacy and ICT integration in financial management.	49
Table 4.15 Principals' proficiency in computer programmes	50
Table 4.16: Principals' use of ICT in performing curriculum and instruction tasks	52
Table 4.18: Principals' gender and ICT integration in staff personnel management	54
Table 4.19: Principals' gender and ICT integration in financial management.....	54
Table 4.20: Teachers' response on principals who integrate ICT in school management	55
Table 4.21: Principals' age and ICT integration in curriculum and instruction	56
Table 4.22: Principals' age and ICT use in student personnel management	57
Table 4.23: Principals' gender and ICT integration in staff personnel management	58
Table 4.24: Principals' age and ICT integration in financial management	59
Table 4.25: Age of principals mostly assessing and using computers	60
Table 4.26: Age of principals mostly integrating ICT into management	61

LIST OF FIGURES

Figure	Page
Figure 2.1: Conceptual framework on principals' characteristics influencing integration of ICT.....	24
Figure 4.1 HODs gender distribution	36

ABBREVIATIONS AND ACRONYMS

BOM	Board of Management
EFA	Education for All
EMIS	Educational Management Information Systems
GIS	Geographical Information Systems
HODs	Head of Departments
ICT	Information Communication Technology
MOEST	Ministry of Education Science and Technology.
NACOSTI	National Commission for Science, Technology and Innovation
SPSS	Statistical Package for Social Sciences
TAM	Technology Acceptance Theory
TSC	Teachers Service Commission (TSC)
UNESCO	United Nations Educational Scientific and Cultural Organization

ABSTRACT

The purpose of the study was to investigate how principals' attitude towards ICT, their ICT literacy level, their gender and age influences integration of Information and Communication Technology in management of secondary schools in Makueni Sub-County. The theory that was used in the study was the Technology Acceptance Theory which was designed by Davis (1989) which was based on factors influencing user adoption and acceptance of technology. The research design used was descriptive survey design. The target population was 43 principals, 135 Heads of Department in the 43 public secondary schools in Makueni Sub-County and one Sub-County Education Officer. Sampling was done by stratifying schools into boarding and day schools and then using simple random sampling a sample size of 28 principals, 61 HODs was obtained. The data was collected using questionnaires sets one for principals and another for HODs, an interview schedule was used for the Sub-County Educational Officer. The data was analyzed according to themes and objectives and quantitative data was entered into the computer for analyzing using the Statistical Package for Social Science (SPSS), frequency distribution tables and pie chart were used to present data. The study revealed that majority of the principals' had a positive attitude towards ICT integration in curriculum and instruction, student personnel management, staff personnel management, and integration in financial management. Principals' literacy levels showed consistency where those who were ICT literate integrated ICT more in performing the various administrative tasks compared to those who had no training. The study also found out that male principals integrated ICT more compared to their female counterparts. This could be because male teachers and female teachers regard computer technology as male domain. Finally, the study found out that age did not influence ICT integration in management of secondary schools. Principals above the age 40 years and principals aged below 40 years integrated ICT in performing administrative tasks despite their age. The researcher found out that majority of the principals had not integrated ICT in school community relation and physical plant management. The study concludes that gender and principals' attitude affects ICT integration in management of secondary schools while age and principals' level of ICT literacy does not influence ICT integration in secondary school management. The study recommends that the Ministry of Education should construct computer laboratories and equip them with ICT tools this will facilitate training of teachers and administrators in all areas of management. School principals should also consider using ICT in physical plant management and in school community relations. Female teachers should embrace ICT by training more and integrating it into school management.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

As the use of technology across the world today increases, each country strives to put mechanisms for integrating the use of technology in all sectors of development. In the mid 1970s, America, Canada and Britain started piloting ICT in their school as part of teaching, learning resource. Information Communication Technology was first integrated in education in 1980 and made compulsory in the developed nations (Tinio, 2003). It was assumed that the integration of ICT into education would revolutionize outdated or old ICTs in education systems (Waema, 2002).

Integration of Information and Communication Technology (ICT) in management refers to the use of information and communication tools and technologies into management with an aim of improving the management process. Okumbe (1998) defines educational management as the process of designing, developing and effecting educational objectives and resources so as to achieve predetermined educational goals. The use of ICTs in the classroom in this information age is very essential in providing opportunities for students to learn. Furthermore, the use of ICTs in teaching and learning has been shown to provide numerous opportunities for teachers and students to efficiently work in an information age (Salehi and Salehi, 2012).

Technology has a positive impact in education, it has contributed to the improvement of teaching and learning, increased productivity and general school management e.g. improved record keeping, financial management and prompt communication with all

school stakeholders. Countries like United States of America, Britain, Russia and German were among the first countries to include ICT in education sector mostly for administrative purposes (Mioduser, Turksapa & Leitner, 2000).

Globally, ICT has shown benefits according to Maki (2008) in a study in Cyprus secondary schools ICT Integration is essential for personnel administration, student's administration, resource administration and financial administration. Maki (2008) further noted that, administrative subsystems include: personnel administration, resource administration, student administration, financial administration and general school administration. From this study Maki, referring to a study by European Commission in Cyprus revealed that schools in Cyprus used ICT both as a subject in the school curriculum and as a teaching tool in secondary schools.

African countries still experience a lag in implementation of ICT, and that continues to widen the digital and knowledge divides. A recent study by Kiptalam and Rodrigues (2010), observed that access to ICT facilities is a major challenge facing most African countries, with a ratio of one computer to 150 students against the ratio of 1:15 students in the developed countries. This clearly shows that the progress of ICT integration in Africa is low compared to other areas in the world.

Farrell and Isaac (2007) on a study on survey of ICT and education in Africa, notes that some African countries have made efforts to integrate ICT in education management. For instance, South Africa has established a comprehensive range of Educational Management Information System (EMIS) platforms that cover the acquisition,

processing, dissemination and reporting of educational data at the national level and at the different education strata. The government has also come up with ICT policies. These policies have facilitated proper management of schools in South Africa.

In Kenya, A report by National Council for Science and Technology (2010) indicates that computer use in Kenya schools is still in its early phases and concludes that the perceptions and experiences of teachers and administrators do play an important role in the use of computers in the classroom. The Government and other stakeholders have come up with initiatives to integrate ICT for an improved education quality; technology has to be implemented into classroom teaching. The National ICT Policy adopted in 2006 addresses several sections; among them include information technology, broadcasting, telecommunication and postal services. However, it is this section on information technology that sets out the objective pertaining to ICT and education. The relevant objective in this section, states that the government will encourage "... the use of ICT in schools, colleges, universities and other education institution in the country so as to improve the quality of teaching and learning". This shows that the Government is committed to ensuring ICT integration in schools.

The Dakar Framework for action World Education Forum (2002) identified that the use of ICTs as one of the main strategies for achieving the Education For all (EFA) goals. The view was supported by the Ministry of Education Science and Technology (MOEST) which views ICTs as having a potential to support the integration of ICT on school management in areas of; curriculum and instruction, financial management, human resource management (both staff and student), physical plant management and

school community relations. This will lead to efficiency and effectiveness in learning institutions (Republic of Kenya 2006).

Pelgrum (1993) on a study on attitude of school principals' and teachers attitude towards computers notes that the attitude of the school principal will determine if this innovation is going to succeed or fail. Several studies have been conducted about teachers and principals attitudes and interest towards implementation of ICT in schools (Lau & Sim, 2008; Jimoyiannis & Komis, 2007). A number of these studies reveal that a considerable number of teachers hold negative attitude towards implementation of ICT in school, portraying negative reactions to computers ranging from mild anxiety to extreme avoidance. School Leaders who have positive expectations towards integration of ICT in school tends to emphasize implementation of ICT in teaching and learning and in general management of schools than schools leaders who have less positive attitude towards computers.

Demirci (2009) conducted a study on teachers' attitude towards the use of Geographical Information System (GIS) In Turkey. The study revealed that though there are many challenges facing ICT integration in schools, teachers' positive attitude towards GIS as an important determinant to the successful integration of GIS into geography lessons. It is clear that principals and teachers with positive attitudes towards implementation of ICT in their school can facilitate its implementation to a great extent. This agrees with Teo (2008) who conducted a survey on pre-service teachers' attitude towards computer use in Singapore, he noted that teachers were more positive about their attitude towards computers and intention to use computers and intention to use computer than their

perceptions of the usefulness of the computer and their control of the computer. These led to more integration of ICT in schools because the teachers believed in the new technology and were willing to use it in teaching and learning.

Principals' confidence level towards using ICT on school management depends on their satisfaction towards ICT training programmes. According to Peralta & Costa (2007), teachers with more experience with computers have greater confidence in their ability to use them effectively. This agrees with Jones (2004) reported that teachers literacy relate directly to confidence. Teachers' confidence also relate to their perceptions of their ability to use computers in the classroom, particularly in relation to their children's perceived competence. The findings show that the level of teachers' satisfaction towards ICT training programmes influences the teachers' competency in school management. If the teacher is satisfied about the programme he/she will easily improve his/her capabilities of using ICT.

According to Makhanu (2010), on a study on Principals' literacy in ICT, the curricula used for training teachers in developing countries like Kenya faces challenges such as teaching the technical aspect of the technology and ignore organizational and social aspects of ICT; hence graduates lack managerial and organizational skills. In-service and pre-service training on ICT can play a great role in exposing the school leaders to different ICT tools and their use, this will enhance them to be conversant and to feel confident to use them in schools. ICT literacy will also increase their morale to learn more about it and practice it in their day to day activities. As leaders of school

development including ICT integration in schools, principals' should have a personal proficiency in computer use, (Schiller, 2003).

Venkatesh and Morris (2000) on their study on Gender, social influence and their role in Technology Acceptance and Usage Behavior identified a significant difference between females and males in introducing a system for information retrieval. However, studies by Al-Khashab (2007) on a study on Attitudes towards E-learning found no significant difference between males and females on the use of ICT in management. Another study by Sia (2000) on urban teachers, computer literacy reported that there was no significant differences in computer usage mean score based on gender. This shows inconsistency with previous literature. There is need to establish whether principals' gender influence ICT integration in management of schools. A study by Chisenga (2006) found that young teachers attitude for computer use may be influenced by age. This match with study done by Plomp and Reinen (2000) in their study on Taiwanese in-service teachers perceptions for using web-based technology and found that the older teachers to be less confident.

1.2 Statement of the problem

According to Makueni Sub- County Education Office (2015), the percentage of Sub-Counties which have integrated ICT in management of secondary schools is as follows; Kathonzweni Sub-County 45 percent, Mukaa Sub-County 43 percent, Mbooni West Sub-County 38 percent and Makueni Sub-County is 33percent. Compared to the neighboring Sub-Counties, ICT integration in Makueni Sub- County is low. What could be the reason for the low rate of ICT integration in Makueni Sub-County? Although a number of

studies have been done on the role of ICT in education, challenges facing schools in implementation of ICT, little has been done on principals' characteristics influencing integration of ICT into school management. There is therefore need to investigate principals' characteristics influencing integration of ICT on management of secondary schools in Makueni County.

1.3 Purpose of the study

The purpose of the study was to investigate principals' characteristics influencing integration of Information and Communication Technology in management of secondary schools in Makueni County, Kenya.

1.4 Research objectives

The study was guided by the following objectives:

- i) To establish the extent to which principals' attitude towards ICT influence integration of Information and Communication Technology in management of secondary schools in Makueni County, Kenya.
- ii) To determine the influence of principals' ICT literacy level on integration of Information and Communication Technology in management of secondary schools in Makueni County, Kenya.
- iii) To determine the influence of principals' gender on integration of Information and Communication Technology in management of secondary schools in Makueni County, Kenya.

- iv) To establish the extent to which principals' age influences integration of Information and Communication Technology in management of secondary schools in Makueni County, Kenya.

1.5 Research questions

The study was guided by the following questions:

- i) How does principals' attitude towards ICT influence integration of Information and Communication Technology in management of secondary schools in Makueni County, Kenya?
- ii) How does principals' ICT literacy level influence integration of Information and Communication Technology in management of secondary schools in Makueni County, Kenya?
- iii) What is the influence of principals' gender on integration of Information and Communication Technology in management of secondary schools in Makueni County, Kenya?
- iv) To what extent does principals' age influence integration of Information and Communication Technology in management of secondary schools in Makueni County, Kenya?

1.6 Significance of the study

The findings and recommendation of this research may provide information to the Teachers Service Commission (TSC) staffing officer at the Sub-County level on the training needs of the principals' in the Sub-County. The study may also assist school principals in making decisions on how to implement ICT in schools. Further, findings of

the study may open areas for further study by other researchers and academicians, hence benefiting the whole community.

1.7 Limitation of the study

The Information and Communication Technology sector is highly dynamic and could change in a short span of time making the findings out of date. To address this setback the term ICT was used largely to cover any new technology that could arise in the course of research. Related research was included to minimize this limitation.

1.8 Delimitation of the study

The study was carried out in public secondary schools in Makueni Sub- County, Makueni County only. The study focused on the individual factors principals' integration of ICT in management in secondary schools.

1.9 Assumption of the study

The study assumed that;

- i) Principals' in Makueni County are conversant with various uses of ICT in the management of schools.
- ii) There are a number of factors that affects the integration of ICT in school administration in secondary schools in Makueni County.

1.10 Definition of significant terms

Attitude refers to perception towards the use of ICT. It is the way the school principal think and feels about ICT integration in school management. The perception can either be positive or negative.

Communication refers to transmission of information through an appropriate medium from the principal to other school stakeholders.

Literacy refers to the ability of school principals being able to handle a wide range of various computer applications for various purposes.

ICT refers to the diverse technological tools and resources used to create, disseminate, store and manage information. The technological tools include computer, the internet and mobile telephony.

ICT integration refers to applying mobile telephony, computers and internet technology in management of secondary schools with an aim of improving management of schools.

Management refers to the planning, organizing, staffing, coordinating, reporting and budgeting done by the principals' in their administration. In this study coordinating school activities will be researched on.

Principal refers to a person who is trained as a teacher and employed by the Teachers Service Commission (TSC) and entrusted by appointment with the overall administration of a public secondary school in accordance to Cap 211 of the laws of Kenya.

1.11 Organization of the study

The study is organized in five chapters. Chapter one comprises of; Introduction, background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, delimitation of the study,

limitation of the study, basic assumption of the study, definition of significant terms and organization of the study.

Chapter two comprises of literature review which consists of: Introduction, the concept of Information and Communication Technology and school management, principals' attitude towards ICT and integration of ICT in management, principals' ICT literacy level and integration of ICT in management, principals' age and integration of ICT in management, principals' gender and ICT integration in management, summary of literature review, theoretical framework and a conceptual framework.

Chapter three consists of research methodology which comprises of: Introduction, research design, target population of the study, sample size and sampling technique, research instruments, validity of instruments, reliability of instruments, data collection procedures, data analysis techniques and ethical considerations. Chapter four discusses data analysis and presentation. Chapter five comprises of a summary of the findings of the research, conclusions relating to the research objectives and recommendation.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter examines literature related to the study. The review was examined under; the concept of Information and Communication Technology and school management, principals' attitude towards ICT and integration of ICT in management, principals' ICT literacy level and integration of ICT in management, principals' age and integration of ICT in management, principals' gender and ICT integration in management, summary of literature review, theoretical framework and a conceptual framework.

2.2 Concept of Information and Communication Technology and school management

Integration of ICT refers incorporation of information and Communication tools and technologies into the classroom delivery of content, learning process and school management with an aim of enhancing teaching and learning and school management process (Mutuma, 2005). This technology tools include: the internet, mobile phones, computers, among other tools and technologies. The use of technology has a positive impact on education, it has contributed to the improvement of teaching and learning, increased productivity, improved record keeping, financial management, prompt communication with all the stakeholders, enhanced creativity among learners and teachers, it saves time, the benefits of ICT cannot be underestimated.

Charalambous & Loannou (2008) in their study in school administration among secondary school principals in Cypriot schools observed that Cypriot school administrators use ICTs in school administration. This implies that if school principals

as leaders regularly use ICT in their administrative tasks they will encourage their teachers especially their deputies and heads of departments to integrate ICT tasks hence making their work easier.

African countries have only recently begun to show micro-economic stability needed for education development and therefore the need to integrate ICT in education administration is real more than ever before (Nduati& Bowman, 2005). One of the ways that this can be fully realized is by making our education system and especially school principals in secondary school completely integrate ICT in the administration of the affairs in their school.

According to Waema (2002) several African countries like Egypt, Mauritius, Rwanda and South Africa have developed comprehensive national policies and strategies to fully integrate ICT in management. Farrell and Isaac (2007) on a study on survey of ICT and education in Africa, notes that some African countries have made efforts to integrate ICT in education management. For instance, South Africa has established a comprehensive range of Educational Management Information System (EMIS) platforms that cover the acquisition, processing, dissemination and reporting of educational data at the national level and at the different education strata. The government has also come up with ICT policies. These policies have facilitated proper management of schools in South Africa.

In Kenya, since early 1990s, increasing numbers of secondary schools acquired computers for use in the institutions. The initiative was partly due to pressure from

parents, communities and politicians. However, in this century, the Kenyan Government has been working towards the realization of transforming all educational institutions in the country to be ICT compliant as attest by the interest shown on ICT in a report by the National Council for Science and Technology (2010) indicates that computer use in Kenya in schools is still in its early phases and concludes that the perception and experiences of teachers and administrators do play an important role in the use of computers in Kenyan schools.

The Kenyan Government has put in place an ICT policy that aims at improving the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable and affordable ICT services. The National ICT Policy adopted in 2006 addresses several sections; among them include information technology, broadcasting, telecommunication and postal services. However, it is this section on information technology that sets out the objective pertaining to ICT and education. The relevant objective in this section, states that the government will encourage "... the use of ICT in schools, colleges, universities and other education institution in the country so as to improve the quality of teaching and learning (Republic of Kenya 2006).

2.3 Principals' attitude towards ICT and ICT integration in management

Jimoyiannis and Komis, (2007) described attitude as cultured inclination to respond in a consistently favorable and unfavorable manner with respect to a given purpose. It involves the willingness of school principals' to integrate ICT in administration of schools. Several studies have been conducted about teachers and principals attitudes and interest towards implementation of ICT in schools (Lau & Sim, 2008; Jimoyiannis &

Komis, 2007). A number of these studies reveal that a considerable number of teachers hold negative attitudes towards implementation of ICT in school, portraying negative reactions to computers ranging from mild anxiety to extreme avoidance. This shows that principals have a challenge of changing their attitudes towards implementation of ICT.

Demirci (2009) conducted a study on teachers' attitude towards the use of Geographical Information System (GIS) In Turkey. The study revealed that though there are many challenges facing ICT integration in schools, teachers' positive attitude towards GIS as an important determinant to the successful integration of GIS into geography lessons. It is clear that principals and teachers with positive attitudes towards implementation of ICT in their school can facilitate its implementation to a great extent. This agrees with a study by Teo (2008) on pre-service teachers' attitude towards computer use in Singapore, he noted that teachers were more positive about their attitude towards computers and intention to use computers and intention to use computer than their perceptions of the usefulness of the computer and their control of the computer. These led to more integration of ICT in schools because the teachers believed in the new technology and were willing to use it in teaching and learning. Principals' computer experience relates positively to their computer attitudes. The more experience principals' have with computers, the more likely that they will show positive attitudes towards computers (Rozell& Gardner, 1999).

Makhanu, (2010) observed that implementation of ICT can be achieved in schools if principals and teachers are fully committed in its implementation over a period of time It is clear that principals and teachers with positive attitudes towards implementation of

ICT in their school can facilitate its implementation to a great extent. To successfully initiate and implement educational technology in school's program depends strongly on the principals' support and attitudes. It is believed that if teachers perceived technology programs as neither fulfilling their needs nor their students' needs, it is likely that they will not integrate the technology into their teaching and learning.

Becta (2004) on a study on enabling teachers to make successful use of ICT notes that, one key area of teachers' attitudes towards the use of technologies is their understanding of how these technologies will benefit their teaching and their students' learning. This means that principals will only support the programmes if they perceive them to be fulfilling to their needs. Principals who use computers enthusiastically speak positively about computer use, whereas non-computer users feel left behind technologically. The situation is more difficult for an administrator who is expected to manage or supervise computer technology in schools. The teachers' and administrators' perceptions and attitudes play significant role in the use of computers. Hence, there is need to provide pre-service and in-service training to enable teachers to successfully integration of ICT in schools. To successfully initiate and implement educational technology in school's program depends strongly on the principals' and teachers' support and attitudes.

2.4 Principals' ICT literacy level and ICT integration in management of schools

Chisenga (2006) noted that one reason that administrators may not use computer technology was lack of access to computer hardware and software. The availability of these technologies requires the principals must possess skills and knowledge appropriate for their responsibilities. Al Khashab (2007) found that, school principals need to have

computer technology for efficient school management. Through training only will principals' acquire technical, human and conceptual skills which would create harmonious and effective school administration.

According to Albirini (2006), pre-service teacher education can play a significant role in providing opportunities for experimentation with ICT before using it in the classroom teaching and school management. The focus in the training should not only be on ICT pedagogical issues but also issues of ICT utilization in the classroom situation and school management. Secondary school leadership is an important factor for effective integration of ICT in schools. As leaders of school development including ICT integration in schools, principals' should have a personal proficiency in computer use (Schiller, 2003). They should realize the importance of new technologies in education and improve their knowledge and skills in the use of computers and other technologies. However, although technology leadership responsibilities may have been assigned to school principals most of them do not have background or suitable training to feel confident in dealing with technology. They should use technology and understand how technology can be integrated effectively in learning and teaching and school management.

Principals' confidence level towards using ICT on school management depends on their satisfaction towards ICT training programmes. According to Peralta & Costa (2007), teachers with more experience with computers have greater confidence in their ability to use them effectively. This agrees with Jones (2004) reported that teachers literacy relate directly to confidence. Teachers' confidence also relate to their perceptions of their ability to use computers in the classroom, particularly in relation to their children's

perceived competence. The findings show that the level of teachers' satisfaction towards ICT training programmes influences the teachers' competency in school management. If the teacher is satisfied about the programme he/she will easily improve his/her capabilities of using ICT.

The training of teachers on adoption and use of ICT in most developing countries has not been appropriate. According to Makhanu, (2010) on a study on Principals' literacy in ICT, the curricula used for training teachers in developing countries like Kenya faces challenges such as: it teaches the technical aspect of the technology and ignores organizational and social aspects of ICT, hence graduates lack managerial and organizational skills, It is also copied from economically developed countries without the training programmes reflecting the prevailing conditions of the local context, the programmes also used for training, in most cases do not accommodate emerging concepts such as Internet. This could be a barrier to ICT integration in Kenyan schools.

According to Mulwa (2012), the level of education of both Principals and teachers has the greatest influence on the readiness to adopt e-learning in secondary schools. This is could be due to the fact that as one goes through higher education use of ICT becomes inevitable hence this will lead to exposure to the use of ICT tools leading to competency in use of ICT tools. With advent of new information technology tools will mean teachers have to gain new and improved skills in using these technologies. The relationship between teachers' confidence level towards using ICT in management of schools indicate a positive relationship between teachers' competency and teachers confidence

level towards using ICT in management. High levels of confidence result to high levels of competency (Waema, 2002).

There is also a positive relationship between teachers' competence and teachers' satisfaction towards ICT training programmes. Studies show that the level of teachers' satisfaction towards ICT training programmes influences the teachers' competence in management of school. If a teacher is satisfied about the programme he/she will easily improve his/her capabilities of using ICT for example he/she will learn ICT for pleasure because he/she enjoyed attending ICT training programmes. The success of integrating ICTs into teaching and learning in developed and developing countries like Kenya depends on how teachers have been prepared to use computers.

2.5 Principals' gender and ICT integration into management

Gender differences and the use of ICT have been reported in several studies.

Venkatesh and Morris (2000) on their study on Gender, social influence and their role in Technology Acceptance and Usage Behavior identified a significant difference between females and males in introducing a system for information retrieval. They studied user reactions and technology usage behavior over a 5-month period among 355 workers being introduced to a new software technology application. They found out that men emphasize more on perceived usefulness in determining behavioral intention to use, while women regarded perceived ease of use as a more significant factor in determining behavior intention to use. The results showed that the decisions of men and younger workers were more strongly influenced by their attitude toward using the new technology.

Al-Khashab (2007) on a study on Attitudes towards E-learning found no significant difference between males and females on the use of ICT in management. Females however, were significantly more interested than their male counterparts in receiving ICT training in management of schools. This shows inconsistency with previous literature. Another study by Sia (2000) on urban teachers, computer literacy reported that there was no significant differences in computer usage mean score based on gender. Yuen and Ma (2002) on a study on gender differences on computer usage found that there were differences between female's laptops concerning the use of e-mail.

Farrel and Isaac (2007) note that ICT is not gender neutral and that gendered power relations are inherent in the production and consumption of ICTs even within education system because they take place through institutions with socially embedded gender relations. In a research conducted by Kay (2006), he found that male teachers had relatively higher levels of computer attitude and ability before computer implementation, but there was no difference between males and females regarding computer attitude and ability after the implementation of the technology. He claims that quality preparation on technology can help lessen gender inequalities. The reviewed studies on gender and actual computer usage show inconsistency some researchers observe that there is a significant relationship between gender and ICT usage and other studies note insignificant relationship

2.6 Principals' age and ICT integration in management

Age affects teachers' perceptions of ICT and its usage on management. Haddad and Jurich (2005) identified that the younger, less experienced teachers use computers in

broad micro transformation fashion and they are more likely to be ICT proficient. They have focus on educational courses on ICT and will be less constrained by prior attitudes or habit than their older more experienced colleagues. Smith (2001) concluded that studies with wide age range tend to report age effect on management of schools.

Studies have shown inconsistent results for instance Odera (2002) on a study of integrated education in Secondary schools in Nyanza, Kenya, reported that out of the 12 studies that had been viewed between computer usage and age, 62 percent insignificant relationship and 38 percent found significant relationship.

Young principals tend to be more knowledgeable in use of ICT in management this is because some of them underwent through education systems when technology had been introduced. Chisenga (2006) found that young teachers attitude for computer use may be influenced by age. This match with study done by Plomp and Reinen (2000) in their study on Taiweness in-service teachers perceptions for using web-based technology and found that the older teachers to be less confident. Reviewed literature shows that principals' age can have a significant influence in integration of ICT.

2.7 Summary of literature review

Reviewed literature has shown that ICT integration in many schools in Africa is still very low compared to the developed countries. Studies by Jimoyiannis & Komis (2007), Lau & Sim (2008), Demirci (2009) and Teo (2008) on attitude of teachers towards ICT integration show consistency, all observe that attitude plays a very important role in building confidence of teachers in the use of ICT. Teachers who have a positive attitude

towards the use of ICT will want to learn more about ICT hence increasing their competency.

Albirini (2006), Al Khashab (2007), Schiller (2004) agree that ICT literacy among principals play a significant role in enhancing ICT integration. They support that principals and teachers' need training on ICT to help them be proficient in the use of ICT tools. Literacy will also help them to build confidence hence successful ICT integration.

Studies by Haddad and Jurich (2005) and Chisenga (2006) on teachers' age and ICT integration show that there is a significant relationship between age and use of ICTs. Authors note that age can be a factor influencing ICT integration. The reviewed studies on gender and actual computer usage show inconsistency, studies by Venkatesh and Morris (2000) show that there is a significant relationship between gender and ICT usage. However, studies by Al-Khashab (2007), Sia (2000) and Yuen and Ma (2002) note insignificant relationship between gender and ICT integration.

Many studies have been done on the role of ICT in schools, challenges facing ICT integration in schools, integration of ICT in teaching and learning but we have scanty research on Principals' characteristics influencing the integration of ICT in management of secondary schools. The study will seek to establish the relationship between principals' age, gender, competency and attitude towards ICT and ICT integration in management of secondary schools in Makueni County, Kenya.

2.8 Theoretical framework

The study was guided by Technology Acceptance Theory (TAM). The model was designed by Davis in 1989 and is based on factors influencing user adoption and acceptance of technology. The model suggests that when users are presented with a new technology, there are factors that influence their decision about how and when they will use it. Such factors are like; Perceived usefulness and perceived ease of use. Perceived usefulness which refers to the degree to which a person believes that using a particular system would enhance his/her job performance. Perceived ease of use, refers to the degree to which a person believes that using a particular system would be free from effort, (Davis, 1989). People form attitudes and intentions towards trying to use new technology prior to directing any effort to using it.

This theory was adopted because the study involved individual characteristics influencing the integration of ICT. The integration depended on the perceived usefulness and ease of use of the new technology. Following this theory the researcher considered the school administrators as chief determinants of the rate of ICT integration in schools depending on whether they perceive the use of ICT as useful or easy to use in administrative tasks. The theory explains the behavior of individuals towards the use of new technology.

2.9 Conceptual framework

A conceptual framework is research tool used to develop awareness and understanding of a study. It helps the researcher to properly identify the problem he/she is looking at.

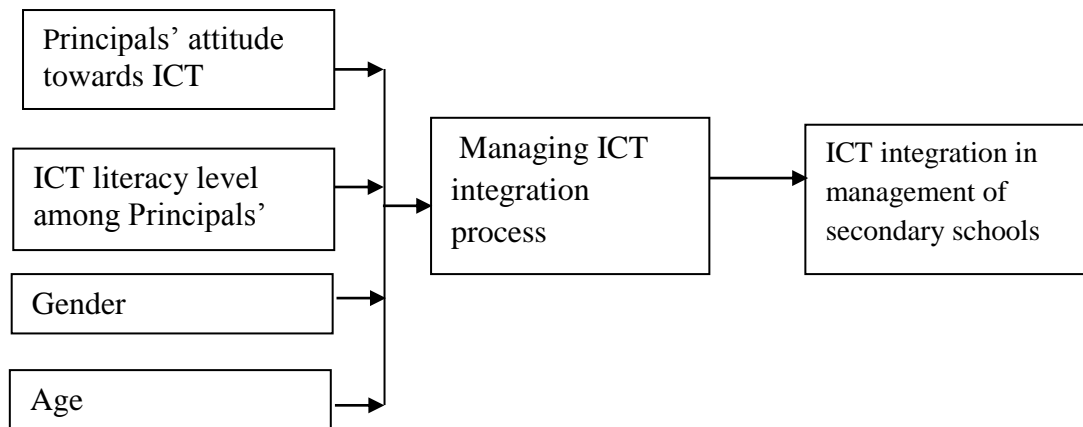


Figure 2.1: Conceptual framework on principals' characteristics influencing integration of ICT into school management

For efficient integration of ICT in schools, the school principals' should have a personal proficiency in computer use. This will help them to have confidence in what they are doing. ICT literacy enables them to change their attitude towards ICT integration in management of schools. A general observation has been made that young principals tend to integrate ICT into management of schools because the education system they underwent had already technology introduced. Gender also affects the integration of ICT in school management male principals use computers more at school and at home where else female's principals use computer less because of the domestic chores they have to perform. Therefore, principals' characteristics have a great influence on integration of ICT in management of schools.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter consists of: Introduction, research design, target population of the study, sample size and sampling technique, research instruments, validity of instruments, reliability of instruments, data collection procedures, data analysis techniques and ethical considerations.

3.2 Research design

Orodho (2009), defines research design as the scheme, outline or plan that is used to generate answers to research problems. According to Mugenda & Mugenda(2003), a sample of 30 percent of the target population is appropriate. The study used descriptive survey design. Survey design allows a researcher to gather information by questioning or interviewing respondents then summarize, present and interpret it. The study aimed at collecting opinions from the administrators about principals' characteristics influencing integration of ICT in secondary schools in Makueni County, Kenya.

3.3 Target population

According to Mugenda and Mugenda (1999), target population refers to an entire group of individuals, events or objects having common observable characteristics. The target population for this study was the 43 public secondary school principals, 135 Heads of Departments (HODs) and the Sub-County Education Officer in Makueni Sub-County. They formed the target population since they are directly involved in management of public secondary schools in the Sub-County.

3.4 Sample size and sampling procedure

According to Orodho and Kombo (2002), sampling is the process of selecting a number of individuals or objects from a population such that the selected group contains elements representative of the characteristics found in the entire group. According to Mugenda & Mugenda(2003), a sample of 30 percent of the target population is appropriate. For this study, a sample of 45 percent of the target population was used as presented in table 3.1.

Table 3.1 Sample frame

Group	Population	Sample size	Sample percentage (%)
Principals	43	28	65.1
H.O.Ds	135	61	45.2
Total respondents	178	89	50

A sample of 28 secondary schools out of 43 was used in the study. Schools were stratified into type as boarding or day schools. There were 28 boarding schools and 15 day schools making a total of 43 schools. Fifteen boarding schools and 13 day schools were selected from each strata using simple random sampling. This was by writing the name of each boarding school in a paper, the papers were rolled in a bowl and the researcher picked 15 papers from the bowl, the schools in the picked papers formed the sample for the boarding schools. The same was be done for the day school where all the schools were written in a paper and rolled in a bowl, the researcher picked 13 papers

from the bowl the schools in the papers picked were part of the research sample. All the principals in selected schools were part of the respondents and two heads of departments were randomly picked to be the respondents in each sample school in big schools the researcher picked 3 HODs. This formed a sample size of 28 principals and 61 HODs.

3.5 Research instruments

The researcher used questionnaires and an interview schedule as methods of collecting data. Questionnaires were used as main instruments for data collection. The researcher used questionnaires because they are cheap with standardized answers that make it simple to compile data. According to Orodho (2008) questionnaires are extensively used to gather data on current conditions, practices, opinions and attitudes quickly and in a precise way.

The questionnaires were administered to the principals (refer to Appendix II) and heads of departments (refer to appendix III). The questionnaires had both open and closed ended questions; Section A sought to obtain demographic data of respondents', Section B, section C, section D and Section E obtained data on principals characteristics influencing ICT integration in management of secondary schools. An interview schedule was conducted for Sub-County Education Officer (refer appendix III). It helped the researcher to collect information through verbal communication on policies, practices and strategies to improve ICT integration in secondary schools.

3.6 Validity of instruments

Validity is the degree to which a test measures what is supposed to measure (Mugenda, 2000). To achieve the validity of the research instrument for this study the researcher conducted a pilot study in two schools which are outside the Sub-County under study. The findings of the pilot study were not included in the final study. After scrutiny, through close consultation and expert judgment of the supervisors the researcher amended the instruments to ensure content and criterion validity.

3.7 Reliability of instruments

Reliability is the measure of the degree to which a research instrument yields consistent results after a repeated trial (Mugenda & Mugenda 1999). Test – retest method was used to measure reliability of instruments, which involved administering the same instrument twice to the same group within two weeks. Reliability correlation coefficient (r) was calculated using the Pearson's product moment correlation coefficient.

$$R = \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{\left[N\sum x^2 - (\sum x)^2 \right] \left[N\sum y^2 - (\sum y)^2 \right]}}$$

Where N= total number of respondent

According to Mugenda and Mugenda (1999), reliability coefficient above 0.80 is satisfactory. The correlation coefficient for principals was 0.76 and that of HODs was 0.79 hence the instruments was deemed reliable.

3.8 Data collection procedures

The researcher secured an introductory letter from University of Nairobi to act as an identity and obtain a research permit from Ministry of Education-National Commission for Science , Technology and Innovations (NACOSTI) in order to collect data in public secondary schools in Makueni Sub-County. The County Director of Education was contacted and informed about the study which took place in the region. The researcher contacted the principals of sampled schools and made appointments. The researcher emphasized that the information given was specifically for that study and the identities of respondents would not be disclosed. The researcher conducted an interview with the Education Officer in the Sub-County.

3.9 Data analysis techniques

Collected data was grouped according to research objectives. Quantitative data was analyzed using descriptive statistics such as frequency distribution and percentages with the help of computer software Statistical Package for social sciences (SPSS). Frequency distribution tables, pie charts and bar graphs were used to present data.

Qualitative data was analyzed using content analysis which comprised of categorizing data into common themes in line with the objectives.

3.10 Ethical considerations

The researcher sought permission to carry out the research from the relevant authorities such as NACOSTI, County Director of Education who gave consent for the study to be carried out. A letter of information providing details of the study and the appropriate

consent letter was distributed to potential participants and an explanation given for their being sampled. The potential participants were then given a verbal explanation of study objectives. Since participants were fully informed of the purpose of the present investigation in advance, each participant gave his or her permission to be interviewed or to fill in the questionnaire.

The researcher ensured that respondents' identity and schools was not disclosed and information gathered was used for academic purpose only. According to Maseko (2002), researchers are ethically obliged to possess a high level of competence and skill in undertaking a study. On that basis the researcher maintained a healthy relationship with each participant and shared a high degree of trust throughout the investigation.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

The purpose of the study was to investigate principals' characteristics influencing integration of ICT in management of secondary schools in Makueni Sub-County. This chapter focuses on response rate, demographic information consisting of; gender, age, level of education and length of service of respondents, analysis and discussion of research findings of the study. The findings are discussed under the following research questions:

- i) How does principals' attitude towards ICT influence integration of Information and Communication Technology in management of secondary schools?
- ii) How does principals' ICT literacy level influence integration of Information and Communication Technology in management of secondary schools?
- iii) What is the influence of principals' gender on integration of Information and Communication Technology in management of secondary schools?
- iv) To what extent does principals' age influence integration of Information and Communication Technology in management of secondary schools?

4.2 Response rate

The sample size of the principals' was 29 but 25 returned the questionnaires. The response rate was 86.2 percent. The sample size of Heads of Departments was 61 but 55 returned the questionnaires, a response rate of 91.2 percent. Mulusa (1998), says that 50 percent return rate is adequate, 60 percent is good and 70 percent very good. The

response rate was hence considered good enough to provide required information for the purpose of data analysis.

4.3 Demographic information

Demographic information of the respondents was sought; the researcher deemed it necessary to look into demographic information of principals and HODs because they make a person who he or she is. Personal characteristics such as educational level, age, gender, educational experience, experience with the computer for educational purpose and attitude towards computers can influence the adoption of a technology, (Schiller, 2003). The respondents were requested to indicate their personal information which was categorized into gender, age, academic qualification and duration of service.

4.3.1 Gender of principals

The study sought information on the gender distribution of principals in Makueni Sub-County. Yuen and Ma (2002) on a study on gender differences on computer usage found that there were significant differences between males and females use of laptops concerning the use of e-mails in integration of ICT into management of secondary schools. The researcher sought the distribution of principals' gender which was later compared against the different administrative tasks they perform to establish whether gender influenced ICT integration in management of schools. Table 4.1 displays gender distribution

Table 4.1: Distribution of principals' gender

Gender	Frequency(f)	Percent (%)
Male	19	76
Female	6	24
Total	25	100

N=25

According to table 4.1 majority of the principals were male, this could be because majority of the schools were boys' schools and mixed secondary schools, this implies that male principals were mostly appointed to head these schools. Out of the 43 schools only four were girls' schools.

4.3.2 Age of principals' and HODs

The principals and HODs were required to indicate their age bracket. Age of respondents is one of the most important characteristics in understanding their views about particular issues. Elderly principals are associated with rich skills in leadership. Chisenga (2006) found that young teachers attitude for computer use may be influenced by age. The findings are presented in Table 4.2;

Table 4.2: Distribution of principals' and HODs age

Age	Principals (%)	HODs (%)
Below 30 years	0	28.6
31-40 years	20	28.6
41-50 years	60	28.6
Above 50 years	20	14.3
Total	100	100

N=25

From table 4.2 it was revealed that the majority of the principals were above 40 years (80%) this could be due to the fact that for a teacher to be appointed as a school principal he/she must be in job group M and above. Teachers in job group M have been in the teaching profession for long hence have served for many years which explains why they are aged 40 years and above. This implies that majority of the principals have rich experience in carrying out administrative tasks hence more skilled.

It was also revealed that most of the HODs were below 50 years only 14.3% of the HODs were 50 years and above. This pattern could be due to most of the teachers above 50 years are principals, deputy principals or senior teachers, others quit job due to limited upward mobility in the teaching profession. The HODs were equally distributed across the age groups from below 30 years to 50 years. This implies that majority of the HODs had undergone an education system that had already integrated ICT hence they have more experience in using ICT tools in carrying out administrative tasks.

4.3.3 Principals' academic qualification in ICT

Training helps one to acquire skills and knowledge to undertake a certain task. Al Khashab (2007) found that, school principals need to have computer technology for efficient school management. The researcher sought to establish the principals ICT academic qualifications and the findings are summarized in the table below;

Table 4.3: Principals' qualification in ICT

ICT qualification	Frequency (f)	Percentage (%)
Certificate	16	64
Diploma	4	16
None	5	20
Total	25	100

N=25

From the above findings majority of the principals had a certificate in ICT, twenty percent of the principals had no training in ICT this reveals that ICT integration in this schools is likely to be low compared to schools where principals have received training this could be due to the principals lacking confidence to integrate ICT into school management. Principals with high levels of knowledge in computer technology have the ability to integrate ICT in the school management. This is supported by Schiller (2003), who noted that as leaders of school development including ICT integration in schools, principals' should have a personal proficiency, in computer use. The level of ICT training of the principals determines their exposure in use of ICT hence their confidence. The relationship between teachers' confidence level towards using ICT in management of schools indicate a positive relationship between teachers' competency and teachers confidence level towards using ICT in management. High levels of confidence result to high levels of competency, the availability of this technology requires that principals possess skills and knowledge appropriate for their responsibilities.

4.3.4 Gender of Heads of Departments

The study sought information on the gender distribution of Heads of Departments in schools in Makueni Sub-County. Figure 4.1 displays gender distribution

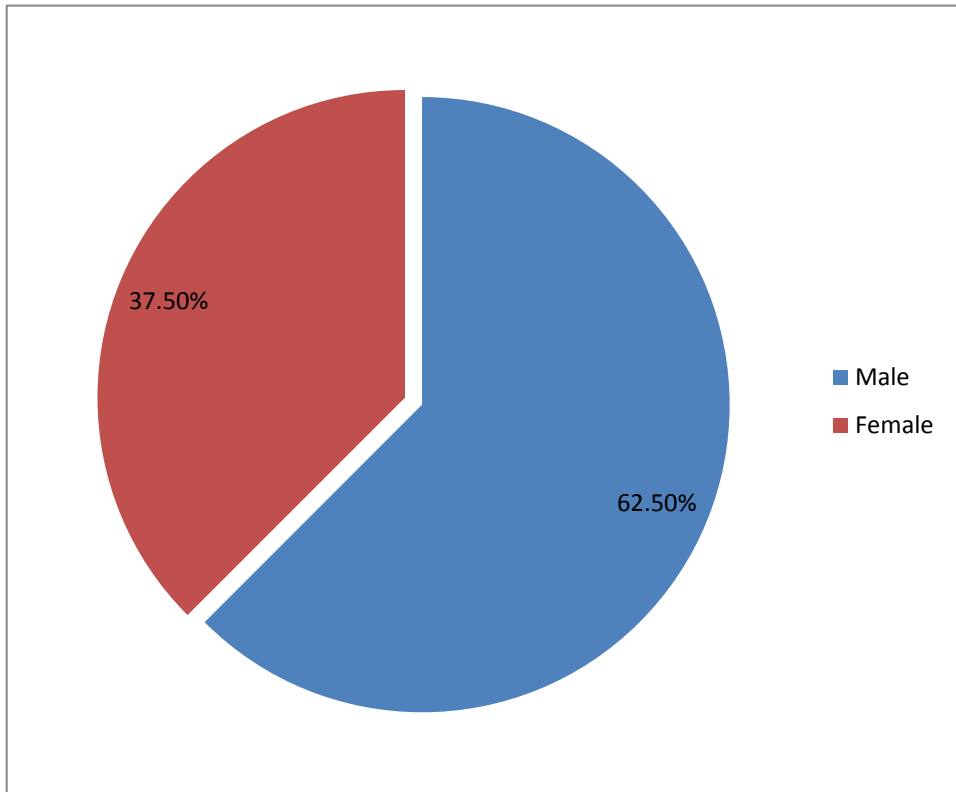


Figure 4.1 HODs gender distribution

According to fig 4.1, the findings revealed that majority of the HODs were males, this pattern could be due to that majority of the schools were boys' schools and mixed schools. This implies that male teachers were mostly appointed to head departments in the schools.

4.3.5 Length of service of HODs

The researcher deemed it necessary to find out the length of service of HODs since they were the ones who are likely to be promoted to the positions of headship and they influence principals' decisions to integrate ICT for they are key decision makers in the

schools. The HODs were required to indicate for how long they had been in the teaching profession this was deemed necessary because they are key decision makers in their departments and they are likely to advise the principals on issues of ICT integration in their departments, the following were the findings which are summarized in the table below;

Table 4.4: Distribution of length of service of HODs

Age	Frequency (f)	Percentage (%)
1-4 years	19	33.9
5-9 years	12	21.4
10-14 years	9	16.1
15-19 years	9	16.1
Above 20 years	7	12.5
Total	56	100

From table 4.4 It was also noted that of 12.5 percent of HODs had served for over 50 years, this is low possibly because at this age majority of the teachers are either principals, deputies, have resigned or quitted the teaching profession. Majority of the HODs had been in the profession for a period of 1-9 years (55.3 %) this implies they have undergone an education system that had integrated ICT in the education system hence they are conversant with the various ICT tools.

4.3.6 Teachers' response on the availability of ICT tools in the school

The researcher deemed it necessary to find out the type of ICTs in schools this was to help the researcher make an opinion on teachers' exposure in ICT. The HODs were asked to indicate whether the listed ICT tools were available or not some principals use ICT tool to perform administrative tasks. Table 4.5 shows the types of ICT in secondary schools.

Table 4.5: Types of ICT in secondary schools

ICT tool	Available (%)	Not available (%)
Cell phone	100	0
Desktop computers	92.9	7.1
Laptops	89.3	10.7
Overhead projectors	71.4	28.6
Radio	66.1	33.9

N=56

From the above table it was observed all the schools had cell phones and used it in contacting parents, school suppliers and BOM members this pattern could be due to its accessibility, ease of use, it's cheap to acquire and this implies that it has been integrated into management of schools. Majority of the schools 92.9 percent and 89.3 percent had desktop computers and laptops respectively this could be due to their availability and most of the schools may have received donations also individual teachers have acquired personal computers for their own benefits. It was discouraging to note that none of the schools had CCTV cameras this can be attributed to the fact that the schools are situated in a rural and pre-urban area hence this is a new technology to them. The heads of departments were also requested to explain how they

use the various ICT gadgets in management of schools; it was found out that cell phones were used for contacting teachers, parents, school suppliers and BOM members. Desktop computers and laptops were used to type exams, for exam analysis, preparing schemes of work and maintaining record. These findings imply that at least every school in the Sub-County had an access to two or three ICT tools and they were being used to perform administrative tasks.

4.4 Principals' attitude towards ICT and its integration in management

The first research objective sought to establish the extent to which principals' attitude towards ICT influence its integration in management of secondary schools. According to Rozell and Gardner (1999) the more experience principals' have with computers, the more likely that they will show positive attitude towards computers. To address this, the researcher analyzed opinions of respondents on their attitude towards the use of ICT in performing some of the administrative tasks such as curriculum and instruction, student personnel management, staff personnel management and financial management. The findings are summarized below;

4.4.1 Principals' attitude towards ICT and its integration in curriculum and instruction areas of school management.

The researcher sought to compare the attitude of principals towards ICT and integration of ICT into management and the finding. This was done by comparing their confidence in the use of ICT tools and curriculum and instruction tasks they perform. The findings are summarized in the table below;

Table 4.6: Principals' confidence in using ICT tools and integration of ICT curriculum and instruction tasks

Task	Typing		Schemes		Lesson		Analyzing		Teaching	
	exams		of work		notes		exams		learning	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
positive	13	9	9	13	4	18	14	8	3	19
attitude										
(f)										
Negative	3	0	2	1	0	3	2	1	0	0
attitude										
(f)										

N= 25

According to table 4.6 it is evident that majority of the principals' (88 percent) had a positive attitude towards ICT integration in curriculum and instruction areas. From the research findings it was noted that principals who had positive attitude towards ICT had integrated ICT more in typing exams (52%) and analyzing results(56%)this could be due to most of the typing work is done by school secretaries this also implied that the principals encouraged teachers to use ICT to do exam analysis. This is supported by Kadel (2005) who stated that the key to how ICT tools are used is the school heads; therefore they must have the right attitude towards technology.

4.4.2 Principals' attitude towards ICT and its integration in student personnel management.

The researcher compared the response of principals on whether they believe ICT will change the way they manage students in their schools and the findings are shown in the table below;

Table 4.7 Principals' attitude towards ICT and student personnel management

Tasks	Maintaining		Analyzing students		Preparing students	
	Students' records		performance		class lists	
	Yes	No	Yes	No	Yes	No
Positive attitude	16	6	13	9	19	3
(f)						
Negative attitude	0	3	3	0	1	2
(f)						

N=25

Table 4.7 indicates that 88 percent of the principals had a positive attitude towards ICT integrating in student personnel management and they believed that ICT will help them in student personnel management. Seventy six percent of the principals had integrated ICT in preparing class list, 64 percent used ICT to maintain students' record and 52 percent used ICT to analyze students' performance. This could be because these tasks did not require complicated computer soft ware's to do them.

4.4.3 Principals' attitude towards ICT and staff personnel management

The researcher sought to compare principals who believed that ICT will help them manage staff and their attitude towards ICT and the findings are summarized in the table below;

Table 4.8: Principals' attitude towards ICT integration and staff personnel management

Tasks	Maintaining teachers' list		Contacting staff		Preparing teachers timetable	
	Yes	No	Yes	No	Yes	No
	Positive attitude	16	6	22	0	2
Negative attitude	3	0	3	0	0	3

N=25

Table 4.9 indicates that majority of the principals had a positive attitude towards the use of ICT in staff personnel management. All the principals indicated that their schools used ICT to contact staff members regardless of their attitude towards ICT. This could be due to the increased use of cell phones, they are also cheap to acquire and easy to use. Majority of the principals both with positive and negative attitude 92 percent had not integrated ICT in preparing of school timetable this could be due to lack of skills to prepare timetable using the computer. This confirms Mudasiru and Modupe (2011) findings that most administrators lack skills on how to use some software's hence leading to low rates of integration in some administrative areas.

4. 4.4 Principals’ attitude towards ICT and its integration in financial school management

The researcher sought to establish whether principals thought that ICT can change the way they manage their schools in performing financial tasks. The findings are summarized in the table below;

Table 4.9: Principals’ attitude towards ICT and its integration in financial school management

Task	Preparing balance sheet		Preparing schemes of work		Keeping financial records		Budgeting	
	Yes	No	Yes	No	Yes	No	Yes	No
	Positive attitude (f)	8	12	2	18	13	7	2
Negative attitude (f)	23	0	0	5	3	2	0	5
N=25								

Table 4.9 indicates that 80 percent of the principals believe that ICT will help them change the way they manage their schools. Fifty two percent used ICT in keeping financial records, however, 92 percent of the principals had not integrated ICT in budgeting and preparation of trial balance this could be due lack of sufficient skills to do this financial tasks using the computer. This agrees with Mogeni (2013) who noted that lack of sufficient knowledge leads to low ICT integration in financial management

because it translates to a negative attitude towards the use of ICT in performing financial tasks.

4.4.5 Principals' attitude towards ICT and its integration in school management

The researcher sought to establish the principals' attitude towards ICT and the findings are summarized in the table below;

Table 4.10 Distribution of principals' attitude towards ICT

Key responses: 1. Strongly Agree (SA), 2. Agree 3. Strongly Agree 4. Disagree 5. Strongly Disagree

Statement	S.A (%)	A (%)	D ((%)	S.D (%)	N.A (%)
Use of software in subject area	24	68	0	8	0
ICT confidence	24	64	0	0	12
Internet gives suitable l. experiences	40	40	20	12	0
Use e-mail for communication	8	40	16	0	12
Use computers in designing l. content	4	52	40	4	0
Demoralized failure to fix a computer malfunction	44	40	4	12	0
ICT has changed school management	52	28	20	0	0
Rarely answer ICT questions	20	8	20	52	0

N= 25

From the findings generally most principals agreed that they can use suitable software to present concepts in subject area (68%), 64% agreed they are confident they can use various ICT tools in the school. 40% strongly agreed that the internet gives suitable

learning experiences, 40% agreed that they use the e-mail to communicate, 40 % disagreed the fact that they can use computer in designing learning content.44% strongly agreed that they feel demoralized when they fail to fix a computer malfunction, 52% strongly agreed that ICT has changed the way they manage their schools. 52% strongly disagreed that they rarely answer questions on ICT. From the above findings it was observed that generally principals had a positive attitude towards ICT which in a key determinant of rate at which ICT is integrated in any school. This is supported by van Braak, Tondeur and Valcke, 2004) who notes that positive computer attitudes are expected to foster computer integration in the classroom.

4.5 Principals' ICT literacy level and ICT integration in secondary school management

The second objective was to determine the influence of principals' literacy level on integration of ICT in management of secondary schools. Knowledge and skills in ICT are gotten through in-service training and exposure to the use of ICT facilities. As leaders of school development including ICT integration in schools, principals' should have a personal proficiency in computer use (Schiller, 2003).To address this researcher compared principals' level of education in ICT against the different administrative tasks they perform. The findings are summarized in the tables below;

4.5.1 Principals' ICT literacy and its integration in curriculum and instruction areas of management

Principals' level of education in ICT was compared against the various curriculum and instruction tasks they perform using ICT so as to establish whether literacy affected the

rate of ICT integration in school management. The findings are summarized in the table below.

Table 4.11: Principals' literacy levels and ICT integration in curriculum and instruction tasks

Tasks	Certificate(f)		Diploma (f)		None (f)	
	Yes	No	Yes	No	Yes	No
Typing exams	11	5	1	3	4	1
Preparing schemes of work	5	11	2	2	23	
Preparing lesson notes	2	14	1	3	0	5
Analyzing exams	10	6	2	2	1	4
Teaching and learning	1	15	2	2	0	5

N=25

From the above table 16 out of 25 principals (64 %) had a certificate in ICT this was encouraging it is this group that integrated ICT more compared to those who had a diploma in ICT. It was also noted that 44 percent of the principals used ICT to type exams. Those who had not received training also integrated ICT in curriculum more than those who had Diploma in ICT. This could be so because these tasks were performed by other people not necessarily the school principal. This is supported by Flanagan (2003) findings which reveal that in many secondary schools informal ICT leaders have emerged from classrooms, libraries and computer laboratories to take up administrative tasks.

4.5.2 Principals' ICT literacy and ICT integration in student personnel management

The researcher sought to establish how principals literacy levels influence ICT integration in management of student personnel and the findings are summarized in the table below;

Table 4.12 Principals' literacy levels and ICT integration in student personnel management

Task	Certificate (f)		Diploma (f)		None (f)	
	Yes	No	Yes	No	Yes	No
Maintaining students records	12	4	2	2	2	3
Preparing class list	14	2	3	1	3	2
Analyzing student performance	10	6	1	3	0	5
N=25						

From the findings above it is evident that the principals with a training certificate in ICT did well in integrating in ICT in student personnel management compared to those who had diplomas and those were not trained. 48 percent of the principals who had a training certificate used ICT to keep student records, 56 percent of them prepared students class list using ICT and 40 percent analyzed students' performance using ICT. The study findings indicated that integration of ICT on student personnel management was affected by principals' literacy levels this could be due to principals being able to use some of the computer softwares to perform basic functions since they have received

training. This match with Jones (2004) who reported that teachers literacy relate directly to confidence. Principals who are literate are confident hence encourages use of ICT in performing this tasks.

Table 4.13: Principals’ ICT literacy and ICT integration in staff personnel management

Tasks	Certificate (f)		Diploma (f)		None (f)	
	Yes	No	Yes	No	Yes	No
Preparing teachers list	13	3	3	1	5	0
Contacting staff members	16	0	4	0	5	0
Preparing timetable	2	14	0	4	0	5

N= 25

Table 4.13 shows that 100% of all the principals use ICT to contact staff members this could be due to the use of phones which are ease of use and they are cheap to acquire. It was also noted that all the five principals who were not trained used ICT to prepare teachers list an informal interview conducted revealed that these activities are done by secretaries on behalf of the principals. This confirms Flanagan (2003) findings which reveal that in many secondary schools informal ICT leaders have emerged from classrooms, libraries and computer laboratories to take up administrative tasks.

4.5.3 Principals' ICT literacy and ICT integration in financial management

The researcher compared how principal's literacy levels influenced integration of ICT in financial management and the findings are presented in the table below;

Table 4.14 Principals' ICT literacy and ICT integration in financial management.

Tasks	Certificate (f)		Diploma (f)		None (f)	
	Yes	No	Yes	No	Yes	No
Preparing balance sheet	6	10	1	3	3	2
Preparing trial balance	2	14	0	4	0	5
Keeping financial records	2	14	2	2	2	3
Budgeting	2	14	0	4	0	5

N=25

Table 4.14 indicates that three principals out of the five who had not trained in ICT integrated ICT more in preparing balance sheet this implies that the school bursar or account clerks were more conversant in using ICT tools to perform this financial tasks. Eight percent of the principals had a training certificate in ICT and used ICT to prepare trial balance and budget; all others were not able to use ICT in preparing the trial balance and school budget.

The principals with a training certificate in ICT were integrating ICT more compared to those who had no training. Generally, ICT integration in performing financial tasks was low this could be due to lack of necessary skills to perform financial tasks since majority of the principals had only a certificate in ICT where they only trained on basic functions of a computer.

4.5.4 Principals' proficiency in computer programmes

The researcher sought to establish the literacy of school principals by providing a list of computer programmes where they were required to tick the extent of their proficiency. The findings are summarized in the table below;

Table 4.15 Principals' proficiency in computer programmes

Computer programmes	None (%)	Little (%)	Moderate (%)	High (%)
Microsoft Word	0	56	36	8
Microsoft Excel	0	52	36	12
Power Point	32	36	28	4
Internet and Email	8	64	28	0

N= 25

The findings revealed that a majority of the principals have little computer literacy in Microsoft word (56 percent), Microsoft Excel (52 percent), Power point (36 percent) and 64 percent in internet and Email therefore, they cannot effectively implement ICT

integration in school management. This is a negative attribute which is not conducive for effective ICT integration in school management. It was also discouraging to note that 32 percent and 8 percent of the principals were illiterate as far as PowerPoint and Email and Internet respectively are concerned. This is a confirmation by Stuart (2009) whose findings revealed that although technology leadership responsibilities may have been assigned formally to school principals, most of them do not have suitable training to feel confident in dealing with this technology. Therefore, there is need for school principals to be trained school on ICT so that they can be effective in school administration.

4.6 Principals' gender and ICT integration

The third objective sought to determine the influence of principals' gender on integration of ICT in management of secondary schools. Gender is inherent but can affect the integration of ICT into management of secondary schools. Yuen and Ma (2002) on a study on gender differences on computer usage found that there were differences between females' laptops concerning the use of e-mail. The researcher sought to establish this by comparing how male and female principals' had integrated ICT into management administrative areas which are; curriculum and instruction, student personnel, staff personnel, financial management. The findings are summarized in the table below;

4.6.1 Principals' gender and ICT integration in curriculum and instruction area.

The researcher sought to establish how principals had integrated ICT in curriculum and instruction area and the findings are summarized below;

Table 4.16: Principals' use of ICT in performing curriculum and instruction tasks

Tasks	Typing exams		Schemes of work		Lesson notes		Exam analysis		Teaching & learning	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Male (f)	13	6	10	9	3	16	13	6	13	6
Female (f)	3	3	1	5	1	5	3	3	0	6

N= 25

According to table 4.16 it is evident that male principals have integrated ICT more than female principals in the area of curriculum and instruction 52.2 percent of the principals who are male use ICT in typing exams compared to 12 percent of the female principals who use ICT in typing exams. It was also noted that 40 percent of the principals use ICT to prepare schemes of work compared to 4 percent of the female principals who use ICT to prepare schemes of work. It was discouraging to note that none of the female principals used ICT in teaching and learning whereas 52 percent of the principals who are males used ICT in teaching and learning. This could be due to the fact that men emphasized more on perceived usefulness in determining behavioral intention to use ICT in management while women regarded perceived ease of use as more significant factor in determining behavior intention to use ICT in management of schools. Also this could be because male teachers and female teachers regard computer technology as male domain. This is consistent with a research conducted by Kay (2006), he observed that male teachers had relatively higher levels of computer attitude and ability compared to female teachers.

4.6.2 Principals' gender and ICT integration into student personnel management

The researcher compared male and female principals on their integration of ICT in student personnel management. The findings are summarized in the table below;

Table 4.17: Principals' gender and ICT integration in student personnel management

Tasks	Maintaining		Preparing		Analyzing	
	students records		students' class list		students'performance	
	Yes	No	Yes	No	Yes	No
Males (f)	14	5	15	4	15	4
Females (f)	4	2	3	3	1	5

N=25

Table 4.17 shows that male principals used ICT more in performing student personnel tasks where 56 percent of the principals who are male used ICT to keep students records, 60 percent used ICT to prepare class list and to analyze students' performance. For the female principals' 16 percent used ICT to keep students record, 12 percent to prepare class list and 4 percent to analyze student performance. From the above findings it is evident that male principals integrate ICT more in student personnel management compared to female principals. This could be due to that computer technology is regarded to as male domain.

4.6.3 Gender and ICT integration in staff personnel management

The researcher compared male and female principals on their integration of ICT in staff personnel management. The findings are summarized in the table below;

Table 4.18: Principals' gender and ICT integration in staff personnel management

Tasks	Preparing		Contacting		Preparing	
	teachers' list		staff members		timetable	
	Yes	No	Yes	No	Yes	No
Males (f)	17	2	19	0	1	18
Females (f)	2	4	6	0	1	5

N=25

Table 4.18 indicates that both male and female principals contacted staff members using ICT (100%) this could be due to the use of cell phones which are easy to use and cheap to acquire. Sixty eight percent of the principals who comprised of male principals indicated they use ICT to prepare teachers list compared to 11.76 percent of female principals who prepared teachers list using ICT. This might have been due to the high number of males in the schools with male principals who were conversant with ICT compared to where principals were females.

4.6.4 Principals' gender and ICT integration in financial management tasks

The principals' gender was compared against the different financial tasks they perform and the findings are shown in the table below;

Table 4.19: Principals' gender and ICT integration in financial management

Tasks	Preparing		Preparing trial		financial		Budgeting	
	balance sheet		balance		records		Yes	No
	Yes	No	Yes	No	Yes	No		
Males (f)	9	10	2	17	11	8	2	17
Females (f)	1	5	0	6	5	1	0	6

N=25

According to table 4.20,36 percent of the principals who comprised of males used ICT in preparing balance sheet, while four percent of the principals who were females prepared balance sheet using ICT. Generally in this task area ICT was not well integrated this might be due to lack of skills in doing financial tasks using ICT.

4.6.5 Teachers’ response on principals who integrate ICT in school management

The researcher sought to establish the gender that encourages integration of ICT in management of secondary schools and the findings are summarized in the table below;

Table 4.20: Teachers’ response on principals who integrate ICT in school management

Gender	Frequency (f)	Percentage (%)
Female	11	19.6
Male	8	14.3
All	33	58.9
None	4	7.1
Total	56	100

N=56

According to table 4.20 58.9 percent of the heads of department respondent that all principals encourages integration of ICT in management of secondary schools However, 19.6 percent of the Heads of the Departments said that female principals encourage ICT integration more compared to their male counterpart.

4. 7 Age of principals and ICT integration

The fourth objective was to establish the extent to which principals’ age influences integration of ICT in management secondary schools. To address this the age of

principals below 40 years and those over 40 years was compared to determine how they had integrated ICT in performing administrative tasks. Age affects teachers' perceptions of ICT and its usage on management. Young principals have been seen to integrate ICT more compared to elderly principals this has been attributed to the fact that they went through an education system that had integrated ICT

4.7.1 Principals' age and ICT integration in curriculum and instruction

Table 4.21: Principals' age and ICT integration in curriculum and instruction

Tasks	Typing exams		Schemes of work		Lesson notes		Exam analysis		Teaching & learning	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Below 40 years (f)	6	0	6	0	3	3	3	3	6	0
Above 40 years (f)	11	8	4	15	13	6	13	6	3	16

N=25

Table 4.21 indicates that 24 percent of the principals were aged 40 years and below and 76 percent of the principals were aged 40 years and above. Principals who were exposed to ICT integrated it in performing curriculum and instruction areas despite their age bracket. From the findings all the principals aged below 40 years had integrated ICT in typing exams and in preparation of schemes of work. 11 principals aged 40 years and above used ICT To type exams and also 13 of them used ICT prepare lesson notes and doing exam analysis. From the above findings it implies that principals who were exposed to ICT could integrate it in performing curriculum and instruction tasks despite their age. This is consistent with studies done by Odera (2002) on a study of integrated education in Secondary schools in Nyanza, Kenya, reported that out of the 12 studies that

had been viewed between computer usage and age, 62 percent insignificant relationship and 38 percent found significant relationship between age and computer usage.

4.7.2 Principals' age and ICT integration in student personnel management

The researcher compared the age of principals and how they had integrated ICT in student personnel management. The findings are displayed in the table below;

Table 4.22: Principals' age and ICT use in student personnel management

Tasks	Maintaining		Preparing		Analyzing	
	students records		students' class list		students'performance	
	Yes	No	Yes	No	Yes	No
Below 40 years (f)	4	2	5	1	2	4
Above 40 years (f)	12	7	15	4	14	5

N=25

Table 4.23 indicates that both groups of principals aged below 40 years and above 40 years integrated ICT in students' personnel management. 15 principals aged 40 years and above used ICT to prepare students class list, 14 of them used ICT to analyze students' performance. Five principals aged below 40 years used ICT to prepare students class list. This pattern shows that older principals integrated ICT in student personnel management despite their age this could be due to exposure in the use of ICT tools and also having a positive attitude towards the use of ICT.

4.7.3 Principals' gender and ICT integration in staff personnel management

Principals who integrated ICT in staff personnel management were compare against their age and the findings are shown in the table below;

Table 4.23: Principals' gender and ICT integration in staff personnel management

Tasks	Preparing		Contacting		Preparing	
	teachers' list		staff members		timetable	
	Yes	No	Yes	No	Yes	No
Below 40 years (f)	5	1	6	0	3	3
Above 40 years (f)	14	5	19	0	6	19

N=25

Table 4.23 shows that 100 percent of the principals used ICT in contacting staff members this could be because of the use of mobile phones which are easy to use and cheaper in terms of acquiring. The researcher from an informal interview with the principals found out that every school had a cell phone and the secretaries had a list of contact for all teachers. Five principals aged below 40 years used ICT preparing teachers list, 14 principals aged 40 years and above used ICT to prepare teachers list. The above findings reveal that age does not influence ICT integration in management of staff.

4.7.4 Principals' age and ICT integration in financial management

Financial management using ICT requires principals to have the necessary accounting skills and operation of computer software's such as QuickBooks. However, some financial tasks do not require complicated software's. The researcher compared the age of principals and integration of ICT into management of financial tasks and the findings are summarized in the table below;

Table 4.24: Principals' age and ICT integration in financial management

Tasks	Preparing balance sheet		Preparing trial balance		financial records		Budgeting	
	Yes	No	Yes	No	Yes	No	Yes	No
Below 40 years (f)	2	4	0	6	5	1	0	6
Above 40 years (f)	8	11	2	17	11	8	2	17

N=25

According to table 4.24 2 principals aged 40 years and below used ICT to prepare balance sheet and none of them used ICT in budgeting this was low compared to their counterparts aged above 40 years because 2 principals aged 40 years and 8 of them used ICT in budgeting and preparing balance sheet respectively. This could be due to having accounts clerks and bursars who had the knowledge on how to prepare balance sheet and budget using ICT. This pattern therefore shows that age is does not influence ICT integration in financial management.

4.7.5 Age bracket of principals accessing and using computers

The researcher sought to establish the age bracket of principals who are accessing and using computers by getting response from HODs, the findings are shown in the table below;

Table 4.25: Age of principals mostly assessing and using computers

Age bracket (years)	Frequency (f)	Percent (%)
Below 30	5	24
31-40	13	52
41-50	6	24
50 and above	0	0
Total	25	100

From the above findings principals aged 31-40 years are the ones who are mostly accessing and using computers with a frequency of 52 percent. This could be because this group of principals has undergone an education system that has already integrated ICT. According to the principals those who are aged 50 years and above do not mostly access and use computers this could be due to lack of interest and exposure in the use ICT tools.

4.7.6: Age bracket of principals mostly integrating ICT in management

Integration of ICT in management of schools is greatly affected by the age of the principals since he/she is the leader of any development in the school. The researcher sought to establish the age of principals mostly integrating ICT in management of secondary schools. The findings are summarized in the table below;

Table 4.26: Age of principals mostly integrating ICT into management

Age bracket	Frequency (f)	Percent (%)
Below 30	2	8
31-40	17	68
41-50	4	16
Above 50	2	8
Total	25	100

From the findings above 76 percent of the respondent responded that principals between 31-40 years are the ones who are mostly integrating ICT in management of schools. Principals above 50 years were seen not to be integrating ICT in management of schools because the education they underwent had not introduced ICT.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary, conclusion, recommendation and suggestions for further study. The main focus of the study was investigating on principals characteristics influencing integration of ICT in management of secondary schools in Makueni Sub-County.

5.2 Summary of the study

The purpose of the study was to examine principals' characteristics influencing integration of ICT into management of secondary schools in MakueniSub-County, Kenya. The study was guided by four objectives which are;

- i) To establish the extent to which principals' attitude towards ICT influence integration of Information and Communication Technology in management of secondary schools.
- ii) To determine the influence of principals' ICT literacy level on integration of Information and Communication Technology in management of secondary schools.
- iii) To determine the influence of principals' gender on integration of Information and Communication Technology in management of secondary schools.

- iv) To establish the extent to which principals' age influences integration of Information and Communication Technology in management of secondary schools.

Research questions were drawn from the objectives to be answered by the study. Related literature to ICT integration and principals' demographic factors was reviewed under; the concept of ICT and school management, principals attitude towards ICT and its integration in management, Principals literacy levels and ICT integration in school management, Principals gender and ICT integration in school management and principals age and ICT integration in school management, theoretical and conceptual framework was provided.

The study targeted all the 43 secondary schools in Sub-County. The study employed stratified and simple random sampling method to get 28 principals and 61 HODs as the respondents. An interview schedule and two questionnaire sets were used to collect the required information. The response rate was 86.2 for the principals and 91.2 percent for the HODs which was found adequate. Data was analyzed using Statistical Package for Social Science to process the frequencies and percentages which were used to discuss the findings. The following were the findings of the study.

5.3 Summary of the findings

On the first objective which was to establish the extent to which principals' attitude towards ICT influence integration of ICT in management of secondary schools. It was established that majority of the principals 88 percent had positive attitude towards ICT. This group of principals used ICT in performing curriculum and instruction tasks,

student and staff personnel management and financial management. However most of them had not integrated ICT in financial management.

The second objective was to establish how principals ICT literacy level influence integration of ICT in management of secondary schools. It was established that 64 percent of the principals had a certificate in ICT, 16 percent had a diploma in ICT and 20 percent had no academic qualification in ICT. Those who had a certificate in ICT training integrated ICT more in the different administrative tasks compared to those who had no training. The findings of the study also found out that majority of the principal 56 percent had little proficiency in Microsoft Word, 52percent in Microsoft Excel, 36 percent in Power point and 64 percent in internet and email. This literacy level is too little to enable them to effectively integrate ICT in school management.

The third objective was to determine the influence of principals' gender on integration of ICT in management of secondary schools. The study findings revealed that male principals used ICT more than female principals. Therefore gender had influence on integration of ICT in management of secondary schools.

The pattern of principals' age and ICT integration in management of secondary schools showed inconsistent results hence according to this study age does not influence ICT integration in management of secondary schools. All the principals in the area of study were found to be aged between 30 years and above. The study findings revealed that principals aged between 31-40 years (52 percent) are the one who are mostly accessing ICT and integrate ICT more.

The findings also revealed that all the schools used cell phones to contact all the school stakeholders and school community. 92.9 percent of the schools had desktop computers and 89.3 percent had laptops this was encouraging because the staff could use this gadgets to perform several administrative tasks. There were various suggestion from HODs that could help to improve ICT integration in schools some of these suggestions were; to build and equip ICT centres in each school, to train teachers in Information Management System (IMS), The schools to purchase more ICT tools, encourage teachers to take up ICT courses, To get sponsor to support ICT projects, make computer subject a compulsory subject and have ICT competitions like science congress.

The researcher established that there are a number of challenges facing ICT integration in secondary school management in Makueni Sub-County. These challenges are; lack of trained personnel, inadequate ICT gadgets, lack of computer laboratories, high cost of installation and Maintenance of ICT tools and computer breakdown. The respondents suggested that the schools should acquire more ICT tools, consider constructing computer laboratories and have regular training for staff members to be well equipped to handle various ICT tools.

It was also noted that principals had not integrated ICT in physical plant management only two schools kept a record of their physical facilities using ICT. In school community relations the schools used cell phone to contact the school stakeholders in this area also ICT was not well integrated. There is need therefore, for principals to be trained on how to use ICT in these areas of management.

5.3 Conclusions

From the study, it is evident that principals' attitude towards the use of ICT influences the integration of ICT in management of school. Based on the findings of the study principals' attitude towards the use of ICT in curriculum and instruction, staff personnel, student personnel management and financial management was found to be positive this could be due to the increased use of ICT and also increased confidence as a result of training.

Principals literacy levels in ICT was found to be low with majority of the principals having a certificate in ICT, this group integrated ICT more in school management compared to those who had no training in ICT. The study also found out that principals, had little proficiency in- Microsoft Word , Microsoft Excel, Power Point and in Internet and Email. There is therefore need for more training to improve on the principals' literacy levels.

Gender affected integration of ICT in schools where majority of the principals' were male and integrated ICT more compared to female principals'. These could be because male teachers and female teachers regard computer technology as male domain. Age of principals did not influence ICT integration because those who had trained were able to integrate ICT into management of schools despite their age bracket. It was also found out that majority of the principals had not integrated ICT in physical plant management and in school community relation therefore there is need for training on how to integrate ICT in these administrative task areas.

5.4 Recommendations

The recommendations of the study are presented below;

- i) The Ministry of Education should construct computer laboratories in schools and equip them with ICT tools this will facilitate training of teachers and administrators so as to integrate ICT in all areas of management.
- ii) Principals should consider using ICT in physical plant management and in school community relations.
- iii) Female teachers to embrace ICT by training more and integrating ICT into school management

5.5 Suggestion for further research

- i) A similar research study to be carried out to analyze other characteristics influencing ICT integration in management of public secondary schools.
- ii) A research study to be carried out in a different geographical region to determine the effects of principals' demographic variables on ICT integration.
- iii) A similar study to be conducted in private secondary schools and also in middle level colleges.

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

Edward Rodah,
University of Nairobi,
Department of Educational Administration & Planning,
Kikuyu Campus
P.O Box 92.
KIKUYU.

Dear Sir/ Madam

RE: REQUEST TO COLLECT DATA FOR RESEARCH PURPOSE.

I am a postgraduate student at the University of Nairobi pursuing a master's degree in Educational Administration. I would like you to permit me to collect data in your school. I am researching on **Principals' characteristics influencing integration of ICT in management of secondary schools in Makueni County, Kenya.**

Kindly, allow me to carry the study in your school. The data will be used for this study only and respondents' identity will not be disclosed. Thanks for your cooperation.

Yours faithfully,

Rodah Edward.

APPENDIX II: QUESTIONNAIRE FOR PRINCIPALS

Introduction: This study intends to collect information on principals’ characteristics influencing the integration of ICT in school management. You are kindly requested to tick (√) the appropriate response as indicated, to express opinion, and use the provided space. The information given will only be used for the purpose of this research and respondents’ identity will not be disclosed. Kindly respond to all items.

Section A: Demographic information

1. Please indicate your gender. Male () Female ()
2. Please indicate your age bracket? Below30 years (), 31 to 40 years (),
41 to 50 years (), abve50 years ()
3. Kindly indicate your highest academic qualification in ICT? Certificate (), Diploma (), Degree (), None ()

Section B: Influence of principals’ attitude towards ICT integration in management of secondary schools

4. Using the scale of 1 to 5 given below, p lease fill in *empty cells*attheright end of the table. Strongly Agree (1), Agree (2), Disagree (3) Strongly Disagree (4), Not Sure (5)

a. I use suitable software to present concepts in my subject area	
b. I am confident that I can use various ICT tools in my school	
c. I believe that ICT helps me to do management tasks	
d. I am assured that Internet gives suitable content with suitable learning experiences	
e. I use e-mail to communicate with teachers, students and parents	
f. The use of computers in designing and presenting content is not easy for me	
g. I use computers in typing exams and class assignments for students	
h. I feel demoralized when I fail to fix small computer malfunction	
j. ICT has changed the way I manage the school I lead	

Section C: Influence of principals’ ICT literacy levels on integration of ICT in management of secondary schools

5. The following is a list of computer programmes available in a secondary school administration setting. Tick the extent of your proficiency in the following.

Computer programs	None	Little	Moderate	High
Microsoft word				
Microsoft excel				
Microsoft Power Point				
Internet and email				

6. In which ways has the school integrated ICT in performing the following administrative tasks;

a) Curriculum and instruction e.g. Use of computers to prepare schemes of work
.....
.....

b) Student personnel e.g. Maintenance of students’ records
.....
.....

c) Staff personnel e.g. Use of ICT in orientation and induction of new staff
.....
.....

d) Financial management e.g. use of computer to prepare financial records like balance sheet
.....
.....

e) School community relations e.g. Use of e-mail and mobile phones to communicate to school stakeholders.
.....
.....

f) Physical facilities e.g. Use of computers to keep a record of physical facilities in the school
.....
.....

SECTION C: The extent to which principals’ age influence ICT integration in management of schools

7. Tick the age bracket of principals’ mostly accessing and using computers.

Below 30 years () 31 – 40 years ()

41 – 50 years () Over 51 years ()

8. Indicate the age of principals’ who mostly integrate ICT in management of schools.

Below 30 years () 31-40 years () 41-50 years () above 50 year

Thanks for your cooperation

APPENDIX III: QUESTIONNAIRE FOR HEADS OF DEPARTMENTS

Introduction: This study intends to collect information on principals' characteristics influencing integration of ICT in school management. You are kindly requested to tick (√) the appropriate response as indicated, to express opinion, and use the provided space. Do not write your name or any form of identification. The information given will only be used for the purpose of this research and respondents' identity will not be disclosed. Kindly respond to all items.

Section A: Demographic information

1. Please indicate your gender? Male () Female ()
2. Please indicate your age bracket? Below 30 years (), 31 to 40 years (), 41 to 50 years (), above 50 years ()
3. For how long have you been in the teaching profession (in years)? 1- 4 years, () 5- 9 years () 10 – 14 years, () over 20 years ()
4. By use of a tick (√) please indicate whether the following ICT gadgets are available in your school.

Item	Available	Not available
Cell phone		
Radios		
Desktop computers		
Overheads projectors		
Laptops		
CCTV cameras		

5. Which of these ICT gadgets does the school use for management of the school?

Technology	Used	Not used	How is it used in school management
_____	_____	_____	_____
Cell phone	_____	_____	_____
Radios	_____	_____	_____
Desktop computers	_____	_____	_____
Overhead projectors	_____	_____	_____
Laptops	_____	_____	_____
CCTV Cameras	_____	_____	_____

6. In which ways has the school integrated ICT in performing the following administrative tasks;

a) Curriculum and instruction e.g. Use of computers to prepare schemes of work

.....

b) Student personnel e.g Use of computers to store students' personal information

.....

c) Staff personnel e.g Use of ICT in orientation and induction of new staff

.....

d) Financial management e.g. Use of computer to prepare financial records like balance sheet

.....

e) School community relations e.g. use of e-mail and mobile phones to communicate to school stakeholders.

.....

.....

f) Physical facilities e.g Use of computers to store information on school facilities e.g no of classes

.....

7. Does the Sub-County Education Office sponsor teachers' for in-service training on ICT?

Yes ()

No ()

8. How frequent does the schools organize training on the use of different types of ICT in your school?

Once a year ()

Twice a year ()

none at all ()

Others (specify).....

9. Suggest ways that can be used to improve ICT integration in your school?

.....

.....

Thanks for your cooperation

APPENDIXES IV: INTERVIEW SCHEDULE FOR SUB-COUNTY EDUCATION OFFICER

You are kindly requested to respond to the following interview. Any information given will be used for the purpose of this study and your identity will not be disclosed.


1. What strategies has the sub-county put in place to ensure successful ICT integration in management of secondary schools in the sub-county?
2. How often does the Sub- County education Office organize for ICT trainings for the school principals' and teachers'?
3. Are there ways in which ICT has helped the education office in monitoring educational programmes in the sub-county?
4. What do you think school principals should do to ensure successful integration of ICT in their schools?
5. What are some of the challenges facing ICT integration in schools in the Sub-County?
6. Suggest ways that we can use to improve the ICT integration in management of schools?

Thanks for your cooperation.

APPENDIX V: RESEARCH PERMIT

THIS IS TO CERTIFY THAT:
MS. RODAH MWONGELI EDWARD
 of UNIVERSITY OF NAIROBI, 415-90300
 WOTE, has been permitted to conduct
research in Makueni County
 on the topic: **PRINCIPALS CHARACTERISTICS INFLUENCING INTEGRATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN MANAGEMENT OF SECONDARY SCHOOLS IN MAKUENI SUB-COUNTY, KENYA**
 for the period ending:
6th November, 2015

Permit No : **NACOSTI/P/15/3316/6066**
 Date Of Issue : **6th July, 2015**
 Fee Received : **Ksh 1,000**




[Signature]
Director General
National Commission for Science, Technology & Innovation

[Signature]
Applicant's Signature

CONDITIONS

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

REPUBLIC OF KENYA

NACOSTI
National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT
Serial No. A: 5656
CONDITIONS: see back page

APPENDIX VI: RESEARCH AUTHORIZATION LETTER



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

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

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

Ref: No.

Date:

NACOSTI/P/15/3316/6066

6th July, 2015

Rodah Mwangeli Edward
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *“Principals characteristics influencing integration of Information and Communication Technology in management of secondary schools in Makueni Sub-County, Kenya,”* I am pleased to inform you that you have been authorized to undertake research in **Makueni County** for a period ending **6th November, 2015.**

You are advised to report to **the County Commissioner and the County Director of Education, Makueni County** before embarking on the research project.

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

DR. M. K. RUGUTT, PhD, HSC.
DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Makueni County.

The County Director of Education
Makueni County.

National Commission for Science, Technology and Innovation is ISO 9001:2008 Certified