FACTORS INFLUENCING THE INTEGRATION OF ICT IN RESOURCE PLANNING IN SECONDARY SCHOOLS IN MASHUURU DISTRICT, KAJIADO COUNTY, KENYA

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DECLARATION

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

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DEDICATION

I dedicate this project to my father Julius Asiago Asibah to whom his children's education a great pride, my husband Paul Tonkei Kesery for your encouragement that made me aspire to undertake further studies, Bresson Rakiro for his counseling that made me work harder irrespective of the challenges I was going through my sister Annette Gesare for acknowledging that am her role model in all my endeavors and finally my daughter Precious Sanaipei for her patience and giving me humble time to study and carry out this project.

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ABBREVIATION AND ACRONYMS

CBIS	Computer Based Instruction Simulation
E-MAIL	Electronic Mail
FAWE	Forum for African Women Educationists
ICT	Information Communication Technology
KENET	Kenya Education Network
KENET:	Kenya Education Network
KESSP	Kenya Education Sector Support Programme
KESSP:	Kenya Education Sector Support Programme
KNEC	Kenya National Examination Council
KNEC	Kenya National Examination Council
MOE	Ministry of Education
MOEST	Ministry of Education Science and Technology
MS Office	Microsoft office
NACOSTI	National Commission of Science and Technology innovation
NCCA	National Council for Curriculum and Assessment
NEPAD	New Partnership for Africa' Development
SPSS	Statistical Package for Social Sciences
TCIP	Transparency Communication Infrastructure Project
UNESCO	United Nations Educational Scientific and Cultural Organization

ABSTRACT

Most of the meetings held in Mashuuru Sub county had experienced wastage of time in tracing the previous records, a times missing records as a result of misplacing them. These were as a result of handling records in manual sheets which get lost each and every time. The sub county being located in a semi-arid area, some donors from Non-Governmental organizations had played a great role in providing Computers in some of the school. According to Mashuuru district inspection report carried out on 20th March, 2014 there were problems of record keeping, the files with confidential information were nowhere to be seen. The principals who had integrated ICT had kept their documents safe and were easily accessible. During their General annual meeting on 10th October 2014 by the District Education Board (D.E.B.) Most principals could not present their Human resource planning details in schools in power point form apart from the few who had integrated ICT in their schools (Mashuuru District office 2014). Due to this, the researcher decided to investigate the problem. This study sought to investigate factors influencing ICT integration in Resource Planning in secondary schools in Mashuuru district, Kajiado County. Specifically, the study sought to establish the availability of ICT infrastructure, establish the level of training of personnel, determine the influence of the teachers' perception and establish the influence of principal age, all in the integration of ICT in resource planning in schools. The study employed descriptive survey design with both qualitative and quantitative approaches targeting 13 secondary schools teachers in Mashuuru district. A sample of 88 respondents was randomly selected to participate in the study while 13 principals were purposefully selected and interviewed for argumentation purposes of the study findings. Data was mainly collected using a questionnaire tool. Structured interviews were also used in collecting quality data from the principals. The study established that most schools had desktops, phones, television, laptops, DVD players, projectors and radios. Based on linear regression, availability of ICT infrastructure, R-squared was 0.224 which explained (22.4%) of the factors influencing integration of ICT in resource planning in schools. The study found out that most teachers were well trained in Microsoft word, emails, Google search and excel. The regression model's adjusted R-squared was 0.145which explain (14.5%) extent at which training factors influenced integration of ICT in resource planning in schools. The regression model's adjusted R-squared was 0.043 in which explains (4.3%) of the teachers' perception factors influencing integration of ICT in resource planning. The regression model's adjusted R-squared was 21.9 as which explains (21.9%) of resource planning as influenced by the age of the principle as an independent variable. This therefore explains (21.9%) of the principle's age factor affecting ICT integration in resource planning. Therefore, the remaining (36.9%) should be explained by other factors possibly not captured in this study. The study concluded that that availability of ICT infrastructure, training and principals' age greatly influence the integration of ICT in resource planning in schools. It was concluded teachers, schools managers, the education officials and the government should work hand in hard to make sure that ICT infrastructure are availed and the staff gets adequate training in order to enhance ICT integration in resource planning in schools.

CHAPTER ONE

INTRODUCTION

1.1. Background to the Study

There was evidence from developed countries that investment in ICT in education planning in schools has had a significant impact (FAWE, 2015). However, there was little doubt that majority of sub-Saharan Africa's populations were missing out on the boons of ICT in resource management in schools (Tuysuz, 2010). As a region lagging behind in integration, use and innovation in the ICT sectors, its people were missing out on a better education and well managed education systems and entities. ICT has contributed greatly to educational planning in schools worldwide (Peeraer and Petergem, 2011). However, East African countries hardly use ICT to manage the quality of output, or to raise teacher productivity, or to reduce costs through analyzing spending. This was attributed to a myriad of challenges facing most schools in this region with regard to integration of ICT in educational planning. This resulted to a slow rate of integration of technology despite its promise and potential for use in educational planning in schools (Kiilu, 2012).

Educational institutions in Kenya in the 21st century, just as in other parts of the world, are increasingly becoming multidimensional organizations requiring tireless input in terms of human, financial and physical resources (FAWE, 2015). Such school working conditions are bound to overwhelm the abilities of today's teacher and administrator if they were not aided in the performance of their school administrative and planning duties. These developments demand therefore that educational institutions modernize their tools of doing their work to enhance the effectiveness of planning and leadership (Adu and Adu, 2013). Increasing numbers of secondary schools in Kenya acquired computers for use in the institutions. The

initiatives were partly due to pressure from parents, communities and politicians. Some of the infrastructures installed in these schools came in the way of donations (Amutabi, 2012). Despite the central role occupied by administration in the schools, for a long time there has been little emphasis on the effectiveness of ICT goals in the Kenyan schools.

It was true that since the turn of the 21st century, the Kenyan Government have been working towards the transformation of all educational institutions in the country to be ICT compliant as attested by the interest shown on ICT in a number of government policy documents (GOK, 2010). Amidst this favorable gesture from the Government of Kenya to embrace ICT, studies suggest that integration and use of ICT in schools across the country have not been automatic. The effective implementation of ICT in schools was a multifaceted, complex process that just not involves providing the technology to schools but also involves teachers' competencies, schools readiness, long term financing and curriculum restructuring, among others (Keengwe and Onchwari, 2011).

1.2. Use of ICT in Management of Schools in Kenya

Educational institutions in Kenya in the 21st century, just as in other parts of the world, are increasingly becoming complex multidimensional organizations requiring tremendous input in terms of human, financial and physical resources (KESI, 2008). Such school working environments are bound to overwhelm the abilities of today's teacher and administrator if they are not aided in the performance of their school administrative duties. These developments demand therefore that educational institutions modernize their tools of conducting business to enhance the effectiveness of management and leadership (Kidombo and Gakuu, 2009).

The incorporation of ICT in school management has been promoted as a key step in bridging the digital divide (Gulbahar and Guven, 2008). ICT shows the way of distributing information in the school and is being used in management of school affairs to change education outcomes (Krishnaveni and Meenakumari, 2010). The main ICT tool to be used in planning and administration is likely to be the computer, together with basic software packages especially MS Word, Excel, PowerPoint, or the equivalent open source packages, and access to email and the internet. In addition there are software packages designed specifically for school planning and administration, including timetabling, databases for learner records, systems for the recording of school development plans, syllabus completion reports, test data, school based assessment records and financial records (Krishnaveni and Meenakumari, 2010).

The emergence of ICT has become a driving force for educational reforms, making it possible for school managers, staff, students and parents to exchange information and ideas ease and instantly. This has been witnessed in number of schools having websites and confirmed by Reddi (2011) who affirmed that to assess level of ICT use in education in Kenya, noted that schools are integrating ICT in planning of finances, co-curricular activities and infrastructure and human resources management. Oguta, Egessa and Musiega (2014) asserted that ICT enhances day-to-day planning of institutions and enables schools to improve in efficiency and cope with rapidly changing world in executing management tasks. In support of this contention Ngugi (2012) notes that cost-effective application of ICT related technology combined with flexibility in learning and administrative activities is essential in enhancing efficiency in secondary schools.

As a Planning tool ICT has made school management tasks less complex, which according to Mingaine (2013), includes coordination of teaching and learning process, along with educational programmes; financial, human resources and supporting resources; library and information science, and general administration. For coordination to achieve educational goals, Alexander (2012) grouped tasks as financial, administrative and instructional management. In financial planning in schools ICT has been used in budgeting, accounting and auditing, which has streamlined financial management and minimized seepage. Again schools have used ICT in directing and controlling activities which includes staff and students' records management plus stores management and procurement implementation process. Instructional planning in schools has used ICT in timetabling, examination management, academic records and teaching-learning process (Ismail, Ahmad and Affandy, 2013).

In Kenya, the government encourages use of ICT as a tool to revolutionize management in schools to enhance more effective organizational structures and create a stronger links with the community and empower learners with skills necessary for independent learning. Through the Ministry of Education, Science and Technology (MOEST), the government of Kenya has provided a policy base for integration of ICT in education and training to enable learners and institutional managers to cope with management challenges arising from technological improvement and globalization (MoE, 2009).

From early 1990s, increasing numbers of secondary schools in Kenya acquired computers for use in the institutions. The initiative was partly due to pressure from parents, communities and politicians. Some of the computers installed in these schools came in the way of donations (Amutabi, 2012). Despite the central role

occupied by administration in the schools, for a long time there has been little emphasis on the effectiveness goals of ICT in the Kenyan schools. However, since the turn of this century, the Kenyan Government has been working towards the realization of transforming all educational institutions in the country to be ICT compliant as attested by the interest shown on ICT in a number of government policy documents (Republic of Kenya, 2005). Amidst this favorable gesture from the Government of Kenya to embrace ICT, studies suggest that integration and use of ICT in schools all over the world has not been automatic. The effective implementation of ICT in schools is a multifaceted, complex process that just not involves providing the technology to schools but also involves teachers' competencies, schools readiness, long term financing and curriculum restructuring, among others (Visscher *et al.*, 2013).

As a matter of fact, schools in Kenya where ICT has been integrated have only adopted computers as technical subject and not integrated its use in school management. The use of ICTs in educational management is greatly under-emphasized (Chigona, 2006). As such, a more holistic approach requires that schools be receptive and open to the changes ICTs may make, and to the ongoing evaluation of these changes for the schools' purposes. Educational managers need to have basic information on quality of teaching, student and teacher flows, probably also of school supplies, and how much the school as a system is spending on various inputs, in order to make the most basic resource allocation decisions. As such, this paper examines the challenges affecting the integration of ICTs in education planning in schools in Kajiado County.

Studies by Becta (2004) indicates that ICT has played an important role in improving planning in educational systems in various ways. For example, through

availing data widespread to parents and the public at large through central administration websites and in some cases through direct access to central databases by school personnel. The convergence between telecommunication, broadcasting multimedia and related technologies commonly known as ICT, promises a fundamental change in educational planning. ICT could be the missing tool in improving efficiency of secondary schools to cope with rapidly changing world to effectively meet management tasks combined with flexibility in learning and administrative activities essential in enhancing efficiency in educational institutions (Ismail, Ahmad and Affandy, 2013).

Schools in Kenya have integrated ICT computers as technical subject and not integrated its use in school resource planning. The use of ICT in educational planning was greatly under-emphasized (Manduku, Kosgey and Sang, 2012). As such, a more holistic approach requires that schools be receptive and open to the changes ICT may make, and to the ongoing evaluation of these changes for the schools' purposes. Principals need to have basic information on quality of teaching, student and teacher in order to make the most basic resource allocation decisions (NEPAD, 2015).

1.2. Statement of the Problem

Most of the meetings held in Mashuuru Sub county had experienced wastage of time in tracing the previous records, a times missing records as a result of misplacing them. These were as a result of handling records in manual sheets which get lost each and every time. The sub county being located in a semi arid area, some donors from Non-Governmental organizations had played a great role in providing Computers in some of the school. According to Mashuuru district inspection report carried out on 20th March, 2014 there were a problem of record keeping, the files with confidential

information were nowhere to be seen. The principals who had integrated ICT had kept their documents safe and were easily accessible. During their General annual meeting on 10th October 2014 by the District Education Board (D.E.B.) most principals could not present their Human resource planning details in schools in power point form apart from the few who had integrated ICT in their schools (Mashuuru District office 2014). Due to this, the researcher decided to investigate the problem.

1.4. Purpose of the Study

The purpose of the study was to investigate factors influencing ICT integration in Resource Planning in secondary schools in Mashuuru district, Kajiado County.

1.5. Objectives of the Study

This study was set to establish the following objectives:-

1. To establish the influence of availability of ICT infrastructure in integration of ICT in resource planning in schools.
2. To establish the influence of level of training of personnel in integration of ICT in resource planning in schools.
3. To determine the influence of the teachers' perception of ICT in the integration of ICT in resource planning in schools.
4. To establish the influence of principal age and the integration of ICT in resource planning in schools.

1.6. Research Questions.

The objectives were guided by the following research questions;

1. To what extend did the availability of ICT infrastructure influence resource planning in schools?
2. What was the influence of teacher's level of training in integration of ICT in Resource Planning in schools?

3. How did teachers' perception influence the integration of ICT in resource planning in schools?
4. To what extend did the principal age influence the integration of ICT integration of resource planning in schools?

1.7. Significance of the Study

This study was important to principals who had not integrated ICT in their schools. It helped them to change their perception towards ICT and this supported the programme in schools that required their input especially in teaching. Teachers, parents and learners benefitted from the integration of ICT in running schools programmes as it enhanced better educational planning. The study findings also benefitted the government officials in making policies that will assist Kenya to meet its MDG of being an ICT acquiescent state by the year 2030. This was achieved through development and formulation of effective strategies in the integration of ICT in schools that enhanced planning of resources in schools.

1.8. Limitation of the Study

The data collected was collected from randomly selected secondary schools. The schools in the sub-County have numerous similarities making the sample almost homogenous. The findings of the study may not reflect a true picture of the whole country and difficult to generalize. The study used primary data which was collected through the use of questionnaire administered to the respondents. Therefore the accuracy of the data collected was dependent on the honesty of the respondents. This could have jeopardized the validity of the study.

To overcome this, the researcher employed three data collection instruments, that is, questionnaire, interview schedule and observation. Data collected from interview and observation was used to argument the questionnaire findings and for triangulation

purposes. Since this study assessed even the attitude of teachers towards ICT, the problem of concealment of information by the respondents was likely to happen. This is due to the sensitive nature of seeking such kind of information that touches on the attitude and perception of respondents. To deal with this, the researcher obtained a research permit and an introductory letter from the university specifying the purpose of the study.

The researcher explained precisely the intended purpose and benefit of the study to help increase the openness and response rate of the respondents. The findings of the study did not however reflect a true picture of the whole country and hence difficult to generalize nationally because of the uniqueness of physical structures. However, adequate sample was used in this study and the findings were used to generalize the data in the entire Mashuuru district. This will help in future comparative studies with other districts in Kenya from which conclusions can be drawn for generalizations purposes nationally.

1.9. Delimitation of the Study

The study delimited itself by concentrating on factors influencing ICT integration on Resource planning in secondary schools in Mashuuru district. This was because ICT had numerous applications at different levels of education as well as wide range of use in virtually all aspects of life which cannot be covered under one study. Mashuuru district had individual private schools, mission private schools and public secondary schools. The respondents of this study were teachers and principals from both public and private secondary schools.

1.10. Basic Assumptions of the Study

The study assumed that;

1. Teachers who were participating in this study were providing adequate data.
2. The sample of the teachers selected were the representative of the entire population characteristics.
3. The information given with the respondent was without fear as their identity was disclosed.

1.11. Definition of Significant Terms

ICT integration refers to applying computer and internet technology to influence the ICT in resource management

ICT Materials refers to a wide range of software technology component such as computer, telecommunication, internet, video and digital cameras that can be used by teachers to support their work.

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

Learning refers to the learners' ability to effect a change in behavior as a result of teaching using an external stimulus, for example, using a computer.

Resource Management refers to the efficient and effective development of an organization's resources when they are needed.

Academic qualification refers to teachers highest official records of academic achievement.

Resource planning refers to systematic planning to achieve most valuable asset.

1.12. Organization of the Study

This study was organized into five chapters. Chapter one was comprised of background of the study, purpose of the study, objectives of the study, research questions, and significance of the study, limitation and delimitation, assumption,

definition of significant terms and organization of the study. Chapter two was covering literature review which was comprised of integration of information communication technology, availability of ICT infrastructure in schools,teacher training in application of ICT,principals age, teachers' perception in integration of ICT, summary of literature review, theoretical framework and conceptual framework of the study.

Chapter three was dealing with research methodology which consists of introduction, research design, target population, sample size sampling technique, research instruments, validity and reliability of the intruments, data collection procedure, data analysis technique and ethical considerations.Chapter four was entailing the presentation, analysis and discussion of data. Chapter five was presenting summary of the entire study, the conclusion made and the recommendations for further research areas.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

There is plethora of literature on ICT, but there is scarcity of literature exclusively focusing on the influence of ICT in the performance of science subjects especially in Kenya secondary schools. This chapter summarizes the information from the available literature in the same field of study. It is important to note that integration of ICT into the resource planning process in schools is not an initiation independent process but it enormous resources in terms of facilities and human capacity as well as participation of all the stakeholders.

This section discusses the integration of Information Communication and technology, availability of infrastructure in integration of ICT in resource planning**,** teacher training in integration of ICT in resource planning, principals' age in integration of ICT in resource planning, teachers' perception in integration of ICT in resource planning, summary of literature, theoretical framework and conceptual framework.

2.2. History of ICT Innovation in School Planning

Though many people believe and perceive ICT to be a new phenomenon, history has shown that humans have been storing, retrieving, manipulating and communicating information during the times of Sumerians of Mesopotamia (Mentz, 2010). The term information technology was first used and appeared in a 1958 in the Harvard Business Review (Koehler, 2011). The proponents of ICT terminology in the business and management world were Leavitt and Whisler whose work appeared in 1958 (Waema, 2005). Based on the storage and processing technologies employed, it is possible to distinguish four distinct phases of IT development: pre mechanical (3000 BC–1450 AD), mechanical (1450–1840), electromechanical (1840–1940) and

electronic (1940–present) (Meryo and Boit 2012). The first and earliest mechanical analogue computer (geared mechanism) referred to as the Antikythera mechanism was used at the beginning of the first century (Waema, 2005).

However, it was not until 1645 when the first mechanical calculator capable of performing the four basic arithmetical operations was developed (Maki, 2008). It was not until 1940s when electronic computers, using either relays or valves began to appear for use in business and as a tool for planning of organizations with electromechanical (Abdullah, 2009) completed in 1941 as the world's first programmable computer, and by modern standards one of the first machines that could be considered a complete computing machine.

The use of ICT innovation in school planning can be tracked back to the 1970s when the computerization of schools gained momentum (Gray, 2007). However, a visible presence of this was evident to the customers since 1980s when some schools in Kenya could communicate to the outside world without necessarily the use of letters. The early decade of the 1990s saw the emergence of automated voice response (AVR) technology. The 1990s is a period in Kenya when the policy allowed the teaching of computer science in secondary schools as a subject though with challenges in terms of trained personnel and lack of power for most schools especially in the rural areas (Lai, 2014).

Before 1979, computers existed primarily in tertiary level educational institutions. Then, in the eighties, microcomputers began to be distributed to schools, and teachers began to grapple with the question of how to use computing for education rather than simply educating about computing (Mentz, 2010). Starting from the mid nineties, the use of ICTs in schools rapidly expanded in developed nations through curriculum

support, networking, the professional development of teachers and software improvements (Afshari, Bakar and Luan, 2009).

The potential of information communications technology (ICT) to enhance human capabilities and revolutionize the planning of organizations was first realized in other sectors of human society, mostly in the business world and the military, other than in education (Albirini, 2007). The importance of ICT contribution is also widely recognized both in the workplace and at home (Koehler, 2011). Through the pledges by the current president and deputy president of Kenya during their campaigns, the teaching of Computer literacy is supposed to commence in standard one in all Kenyan primary schools. These examples are just a few pointers which show that ICT is becoming a vital enabling tool that can no longer be ignored in the planning of resources of schools.

2.3. The Use of ICT in the Resource Planning Schools

In educational administration, computers have been used in timetabling, personnel management, financial control and examination administration. Spence & Smith (2009) noted that technology can help administrators to deal with some of the challenges they face but only if they have a vision and know how to harness it and make it part of the fabric that supports the teaching and learning process in schools. The use of computers has also helped school administrators to plan and allocate human resource and physical resources more effectively.

Maguire (2003) explained how the ability connects computers through networks helps principals to work together and share information and thus promoting school -community relationship. For ICT integration programs to be effective and sustainable, administrators themselves must be competent in the use of the technology, and they must have a broad understanding of the technical,

curricular, administrative, financial, and social dimensions of ICT use in education (Chepkonga, 2012).

ICT plays a key role in the planning and management of complex information flow and integration of such information towards effective policy formulation and planning towards the utmost maximization of human capital and potential in the school environment. Thus, it involves the development of effective and integrated tools as well as training modules to enable their application through effective teacher training (Sookram, 2008).Integration of ICT is rapidly becoming an indispensable part of school life and an inevitable in financial management. In support of this position Ngugi (2012) noted that ICTs has become valuable for storing and analyzing data in school financial planning which includes budgetary allocations, expenditures, students' fees payment and general accounting.

According to Roberts & Sikes (2011) as an aspect of financial planning and control, budgeting process in schools requires the availability of multiple sources of information to cope which can best availed through incorporation of ICT in school planning and management systems. Budgetary allocations as aspects of budgeting process in school management are intricate processes requiring reliable, timely, user-friendly information for supporting planning decisions. Makhanu and Kamper (2012) revealed that heads of secondary schools have utilized technology in planning and control in financial planning, which greatly improved discipline in resource management.

2.4. Benefits of ICT in Education Planning

The benefit of introducing ICTs in education planning and development is an intricate process that requires reliable, timely, user-friendly data (North, 2011). ICTs can be valuable for storing and analyzing data on education indicators; students'

assessments; educational, physical and human infrastructure; and cost and finance (Bryderup and Kowalski, 2010). The use of computer related technology is particularly helpful in this field. For instance, administrators and policy makers can construct virtual scenarios around different policy options to determine needs and analyze potential consequences. Each scenario can be analyzed and evaluated systematically, not only in terms of educational desirability, but also in terms of financial afford-ability, feasibility and sustainability over a sufficient period of time to show results (Kidombo and Gakuu, 2009).

According to Cohen and Salomon (2011), the same elements of computing and telecommunications equipment and service that have made businesses more efficient and cost-effective can be applied to schools and educational systems. ICTs can help school administrators and school principals to streamline operations, monitor performance and improve use of physical and human resources (Tearle, 2008). More than other technologies, computer related technologies have the potential to support the planning of complex, standards-related instructional processes in relatively simple ways. They can also promote communication among schools, parents, central decision makers and businesses thus fostering accountability, public support, and connectivity with market place (Republic of Kenya, 2009).

Usage of ICT in administrative planning involves harnessing technology for better planning, setting standards, effecting change and monitoring results of the core functions of secondary schools. According to Sanja and Rabah (2013), ICT is used in maintenance of records, communication and documents planning. A study carried by Winkelmann and Leyh (2013) in South Eastern States, Nigeria noted that influence of ICT on planning and management systems have changed nature of administration in secondary school by allowing information to be transferred, stored, retrieved, and

processed by almost all who work, study or interact within and outside the institutions. This according to Meryo and Boit (2012) has improved efficiency in day-to-day school operational activities especially in managing information about students, staff and resources. Based on this realization Makewa, Role and Nyamboga (2011) asserted that integration of ICT into secondary administrative processes enhance overall schools' records by making it more accessible to many within a short time.

Makhanu and Kamper (2012) further noted that ICT automation of admission process from enquiry by students, applying for admissions through electronic media, registration and enrolment using computers has improved planning initiatives to adequately, handle both students and stakeholder related issues. On staff administration, Alexander (2012) asserted that ICT has enabled allocation of work, attendance, and leave planning and performance appraisal, raising efficiency in task distribution, data collection and planning. Oguta, Egessa and Musiega (2014), noted that ICT helps in staff planning by processing of voluminous records in a quick, meticulous, and impeccable manner, it easens data retrieval. In supporting of this position, Mingaine (2013) indicated that ICT can help in providing a good communication system in providing timely information internal and external users acquisition and dissemination in all institution including schools**.**

2.5. Integration of Information Communication and Technology in Resource Planning in Schools

Information Communication Technology according (ICT) to Ewumi (2011), comprises of computer and telecommunication. It was concerned with the technology used in handling, acquiring, processing, storing and dissemination of information. Evey et al. (2010) observes that ICT is an innovative device that can carry out such

functions as receiving, storing, computing, analyzing, transmitting and retrieving information presented to them and allowing for one -to-one or group communication among humans. Folorunso, Longe and Ijere (2003) identified ICT infrastructure as the hardware technologies which should also include internet, World Wide Web (www), Electronic Data Interchange (EDI), Local Area Network (LAN), Wide Area Networks (WAN), Protocols, Content Management and Meta Data Standard (MDS).

Evey et al. (2010) observes that ICT is an innovative device that can carry out such functions as receiving, storing, computing, analyzing, transmitting and retrieving information presented to them and allowing for one -to-one or group communication among humans. Obashoro (2007) identified ICT infrastructure to include multi-media CD-ROMs, MP3 players, websites, discussion boards, emails, computer-aided assessments, learning management software, blogs, etc. In the same vein, Folorunso, Longe and Ijere (2003) identified ICT infrastructure as the hardware technologies which should also include internet, World Wide Web (www), Electronic Data Interchange (EDI), Local Area Network (LAN), Wide Area Networks (WAN), Protocols, Content Management and Meta Data Standard (MDS).

In recent times, there has been intense advocacy both nationally and internationally for the integration of ICT in secondary schools (UNESCO, 2015). Kandiri (2012) observed that integration of ICT in the school is to enhance better planning and management of schools. It ensures transactional institutional communication where the teachers and school managers managed the human materials, time and space to make sure that school activities run well.

In Kenya, improved secondary education is fundamental to the creation of effective human capital. Secondary school education system is the most strategic education sector and unfortunately the least developed and the least available. With the vision of changing planning and management paradigms in Kenya, the introduction of ICT in schools initiatives aim to tackle the problems of secondary education in the country through the application of ICT. However, a successful exploitation of the potential of ICT for the enhancement of secondary education depends more on pedagogical and inter-organizational strategies than ICT issues (GOK, 2015).

2.6. Availability of ICT Infrastructure and Integration of ICT in Resource Planning

For teachers and their students, the availability of ICT materials like modern computers, peripherals, networking and resources within an increasingly diverse range of technologies was an essential part of school planning in the 21st century (Peeraer and Petergem, 2011). ICT constitutes an input in the teacher planning process that should help produce better learning output. The availability of ICT resources can enhance proper planning by making education less dependent on differing teacher quality and by making early education planning possible (Olukemi, 2014). The use of ICT can positively transmit knowledge to students. Infrastructure requirements were costly and involved various stakeholders, particularly the governments of African states. There were a number of challenges concerning access to and use of ICT in Kenya, including high levels of poverty, limited rural electrification, and frequent power disruptions (GOK, 2015).

Therefore, the expansion of basic services and the development of sustainable infrastructure are key challenges of ICT integration in schools. Basic infrastructures are critical for successful implementation of ICT resource planning in schools (World

Bank, 2014). Technical and basic infrastructures, coupled with sustaining schemas, make up structures that can empower or constrain the application of ICT in secondary education. Infrastructure requirements are costly and involve various stakeholders, particularly the governments of African states. There are a number of challenges concerning access to and use of ICT in Kenya, including high levels of poverty, limited rural electrification, and frequent power disruptions (GOK, 2015).

According to FAWE (2015), costs were also an important factor that guides the integration of ICT in a country. A small number of schools had direct access to high-speed connectivity through an Internet service provider. Generally there is limited penetration of the national physical telecommunication infrastructure into rural and low-income areas. Consequently, there was limited access to dedicated phone lines and high-speed connectivity for e-mail and the Internet. Many schools in Kenya were constrained by resource scarcity. Even where the importance of ICT is recognized, allocation for the development of ICT is often inadequate. Mugenda (2006) points out that one of the greatest challenges in ICT use in education were balancing educational goals with economic realities.

Another important infrastructure that enhanced the integration of ICT in school was the availability of technical support specialist. They were essential to the continued viability of ICT use in a given school. The general competencies required were in the installation, operation and maintenance of ICT. Without on-site technical support, much time and money may be lost due to technical breakdowns and can delay the teaching and learning process. In many parts of Kenya, for example, one of the major obstacles to optimizing computer used in high schools have been the lacks of timely technical support (FAWE, 2015).

Kenya's educational technology infrastructure sits on top of the national telecommunications and information infrastructure. Before any ICT-based programme is launched in schools, school managers and other policy planners must carefully consider the following: appropriate rooms or buildings available to house the technology, availability of electricity and telephony, availability of adequate and trained human resource as well as adequate information technologies like computers or enough resource to purchase them (UNESCO, 2015). The structure of the curriculum of the school should also be tailored towards the use of ICT (NEPAD, 2015).

In some extreme cases involving schools in remote areas, disabled computers take months to be sent to the nearest city hundreds of kilometers away (GOK, 2015). Higgins& Moseley (2011) observed that content development was a critical area that was too often overlooked. The bulk of existing educational material for institutions was in printed form. There was a need to develop original educational content, adapt existing content, and convert print-based content to digital media. School administrators and teachers had a positive attitude and confidence in these facilities, which was in turn reliant on the facilities reliability or degree to which they were sure that they had access to them at all expected times and utilize them predictably to the betterment of their work, an issue on which consensus is enormous as was clear from ICT in education scholars like Higgins and Moseley (2011), Khan et al., (2011), and Ayere et al., (2010).

2.7. Human Resource Level of Training and Integration of ICT in Resource Planning

According to Evey et al. (2010), a teacher is the creator and manager of stimulating a learning environment. He must be a good communicator and demonstrator to achieve

the needs of today changing world. In order to plan and communicate effectively, he has to employ varying strategies and means of giving out and recovering of the message of the intended recipients (TS and Logistics Group, 2011).ICT-enhanced planning mobilizes tools for examination, calculation and analysis of information, thus providing a platform for student inquiry, analysis and construction of new information. Therefore, adoption and use of ICT in schools required skilled human resource that was knowledgeable about the potential that ICT presents during the planning of activities in schools (Peeraer and Petergem, 2011).

According to Prestride, (2012) computer aided resource planning was the most appropriate skill required for human resource. According to Andoh, (2012) training was directed to "using ICT to plan and manage teaching and learning resources" rather than "learning to use ICT". Prestride, (2012) outlined some of ICT packages required such as data processing, word processing, use of internet, use of spreadsheet, use of presentation software like PowerPoint and e-mail. These ICT packages were important to teachers because they assisted in creating lesson plans, analyzing and setting students' tests, acquiring new knowledge and presenting lesson in a clear way among others (Higgins and Moseley, 2011) the receptionist , bursars also required the same programmes.

A major challenge identified in Kenya regarding integration and use of ICT in schools is that there are few human resource staff, and where there are, they are most likely IT professionals without any education experiences, skills, and/or qualifications. Trained human resource played a critical role in integration and use of ICT as they were at the centre of innovation at school level. However, many schools faced a challenge of shortages of ICT teachers and other ICT professional that support adoption and use of ICT in resource planning purposes. Many schools continue losing

well trained ICT teachers to private sector which seems to pay higher salaries (GOK, 2010).

Therefore, inadequate preparation of human resource trainees on how to use ICT could be perceived as a reason why the adoption and integration has been hard. A report by Ministry of Higher Education, Science and Technology (GOK, 2010) on secondary school teachers' adoption and use of ICT also indicated the number of teachers skilled in ICT in secondary schools was low. The study revealed that out of the number available, few had ICT training effective in integration and use of the technology in schools. There is therefore a likelihood that teachers could integrate and use ICT if professional training provided them with ample time to learn, share, practice, and collaborate with colleagues about the technology (Peeraer and Petergem, 2011).

2.8. Principal Age and Integration of ICT in Resource Planning

Teachers' age influenced the integration of an innovation. The report by the National Center for Education Statistics (2000) indicated that teachers with fewer years of experience were more likely to use computers in their classes than teachers with more years of experience. Studies by Tuysuz (2010) indicated that more specifically, teachers with less teaching experience use computers more than teachers with long teaching experience. This may be due to the fact that new teachers have been exposed to computers during their training and therefore, have more experience using this tool (Ncunge et al. (2012).

Moreover, Peeraer and Petergem (2011) investigated about age differences in the overlooked context of individual integration and sustained usage of technology in the workplace using the Theory of Planned Behavior (TPB). They studied on user reactions and technology usage behavior over a 5-month period among 355 workers being introduced to a new software technology application. The results showed that

the decisions of younger workers were more strongly influenced by their attitude toward using the new technology. In contrast, older worker were more strongly influenced by subjective norm and perceived behavioral control. Then, these groups of people adopt very different decision processes in evaluating new technologies. On the other hand, Khan and Inamullah (2011) found that age was not a significant factor in relation to teachers' attitudes towards ICT.

In addition, Ewumi (2011) carried out a study about technology integration in the schools. They used a qualitative study to examine the classroom practice of 30 "tech-savvy" teachers who used computer technology in their instruction. They found that teachers, who were new and skilled with technology, were innovative and adept at overcoming obstacles, and that they did integrated technology on a consistent basis as both a teaching and learning tool. The authors above agree with the results of study Kandiri (2012) that the probability that teachers would use ICT in the classroom was limited by the reality that teachers who were educated 20 years ago were trained by people who themselves were trained before the arrival of computers in schools.

2.9. Teachers' Perception of ICT and ICT Integration in Resource Planning

Teachers' Perception towards new technologies in secondary schools and its effects in integration and use shows that if teachers perceive use of ICT as either satisfying their own needs or their students' needs, it is likely they would implement it in school. Attitude is brought about by other factors like teachers' competency, skills, knowledge and perception towards ICT (NEPAD, 2015). Research suggests that teachers' Perception influence successful implementation of ICT in schools (Keengwe and Onchwari, 2011). If teachers' perceptions are positive toward use of ICT, then they can easily use it or provide useful insight about its implementation (Olanipekun, 2013).

A study by Huang and Liaw (2008) showed that teachers' perceptions are influenced by their acceptance of the usefulness of ICT and its implementation in schools. A survey by EU School net in 2010 (cited by Andoh, 2012) involving teachers' use of ICT in six European Union countries, revealed that a large number of participants perceived use of ICT had positive impact on their learning, elicited interest, promoted individualized learning and helped to lengthen study beyond school day. However, a study by Korte and Husing (2007) suggested that small number of teachers perceived benefits of ICT in schools were not clearly identified. Some teachers viewed ICT as waste of time and expensive.

A similar study by Andoh (2012) revealed that teachers' skills, perception and attitudes were related to their use of ICT in resource planning. The more skilled teachers are in ICT, the more likely they were to use it. Further study by Drent & Meelissen (2013) revealed that positive attitude, personal entrepreneurship and computer experience had a direct positive influence on adoption and use of ICT by teachers. Woodrow (2002) points that for successful transformation of school practice; teachers need to develop positive attitudes toward innovations. Winkelmann and Leyh (2013) argued that positive computer attitudes by teachers are expected to foster implementation of ICT in schools. Further study by Teo (2012) on teachers' attitudes towards computer use in Singapore, found that teachers were more positive about their attitude towards computers and intention to use them, than the helpfulness of computer towards other use. These studies reveal that teacher's skills, perceptions, and attitudes influence adoption and use of ICT in schools.

2.10. Summary of Literature Review

From the review of literature, it was noted that many factors affected effective integration of ICT in secondary school education which enhanced effective resource planning. The studies which had been done on use and influence of ICT on education had a unique difference from each other and particularly compared to the present study. One of the factors that differentiate them is the time and place of the study. As pointed out earlier by Olukemi (2014), ICT is changing very fast and repeating a similar study even in the same area after a period of time like 3 years might present totally different results. The current study therefore will investigate factors that influence ICT integration in resource planning in Secondary schools in Mashuuru district. The literature reviewed above hints that there could be a lot more factors affecting the level of integration of ICT in resource planning in schools besides the factors explored in the present study.

Most research that have sort to study the influence of factors on ICT integration in resource planning in schools have been done in developed countries and the focus has been on mainly infrastructural factors. According to the literature review, the study did found a research gap in linking the factors and ICT integration in resource planning in secondary schools in a developing country like Kenya. Research was therefore required in this area to paint the picture of how the following factors that is availability of infrastructure; teachers' perception, teacher training and age of the principal influence the integration of ICT in resource planning in schools in Mashuuru district.

2.11. Theoretical Framework

This study was guided by both on a theoretical and conceptual framework. System Diffusion Innovation theory was adapted for this study.

2.11.1. System Innovation Diffusion Theory

This theory was developed by Everett Rogers and it seeks to explain how, why, and at what rate new ideas and technology spread. Rogers argues that diffusion is the process by which an innovation is communicated over time among the participants in a social system. Rogers further proposes that four main elements influence the spread of a new idea: the innovation itself, communication channels, time, and a social system. This process relies heavily on human capital. The innovation must be widely adopted in order to self-sustain. Moreover, the theory states that in a social system, there are three ways the decisions are taken which include optional, collective and authority. According to Roger, there are five mechanisms of diffusion of innovation theory through stage; knowledge, persuasion, decision, implementation and conformation (Rogers, 2003).

Therefore, in the introduction of innovations in schools, was considered it was prudent to take cognizance of the interdependencies and interactions first between the sub-systems and secondly with the external environment. The sub-systems and the interactions among them provide authority and a constituent socio-technical environment which supported ICT integration in schools (Gigerenzer and Selten, 2001). Better adoption of ICT in schools thus need the participation of persons at individual level (optional), cooperation among the stakeholders (collective) and support from the administration (authority). Teachers and other workers need to be knowledgeable and persuaded to make decision on ICT use so as to participate in the implementation process through proper conformation as outlined by Rogers (Rogers, 2003).

Diffusion occurs through a combination of (a) the need for teachers to reduce personal uncertainty when presented with new information on ICT, and (b) the need for

teachers to respond to their perceptions of what specific credible others are thinking and doing, and (c) to general felt social pressure to use ICT as others have done. Uncertainty in response to ICT typically leads to a search for information and, if the potential teachers believe ICT to be interesting and with the potential for benefits, a search for evaluative judgments of trusted and respected others (Gigerenzer and Selten, 2001).

The above theory was chosen to guide this study so that there is an all-encompassing nature to get the picture of the major factors that influence ICT integration in schools.

2.11.2. Conceptual Framework

A conceptual framework is an analytical tool with several variations and contexts that is used to help a researcher to identify the problem he is looking at. It helped the researcher frame her research questions and found suitable literature. It clarified research questions and aims.

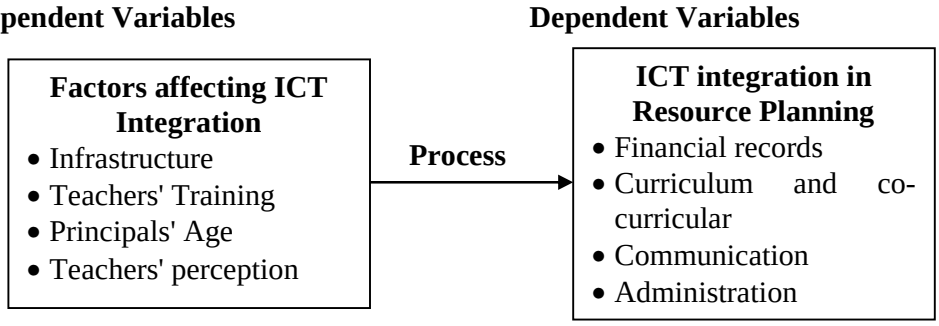


Figure 2.1: Resource planning in schools as a result of ICT integration

The independent variables (leadership, teacher training in terms of competency, skills and knowledge, Principals age, teachers' attitude and perception) influence the integration and of ICT in resource planning in secondary schools. These factors affects the use of ICT in resource planning in schools (school financial records e.g. accounts, payroll, budgeting; curriculum and co-curricular e.g. examination,

timetabling, student progress; communication e.g. phone, emails, database; and administration of e.g. store, staff and student records).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter explored research methodology under the following Sub heading: Research design, target population, sample size and sampling techniques, research instruments, validity and reliability of the instruments, data collection procedures, ethical consideration and data analysis techniques.

3.2. Research Design

Research design is the structure of any scientific work that gives direction and systemizes the research. This study used descriptive survey design. According to Orothe (2005) is a method of collecting information by interviewing or administering a questionnaire to a sample of individual. A descriptive survey design with both qualitative and quantitative research approaches. These methods helped to unearth the influence of ICT on resource planning in secondary schools in Mashuuru district. Survey approach was preferred because the study population was scattered owing to the geographical nature of secondary schools which are located away from each other in Mashuuru district. The survey design helped to get information from teachers in the sampled schools. The advantages of combining qualitative and quantitative techniques in research were given by Kothari (2004) who pointed out that these methods triangulate and complement the results obtained from each of these approaches and minimizes the methodological problems that result from the weaknesses inherent in any of the research designs.

The descriptive survey design was also adopted to allow describe the state of affairs as they exist currently (Kothari, 2004) in the schools regarding the utilization of ICT. The researcher applied this design to investigate the influence of ICT on resource

planning in schools. Moreover, descriptive method was deemed useful because information was readily obtainable from subjects in their natural environment, concerning their knowledge, experience, attitudes or beliefs on certain issues of the study.

Quantitative research involved the collection of numerical data in order to explain, predict and analyze the phenomena under study, data analysis being mainly statistical. On the other hand, Qualitative approach was deemed useful because of its unique feature which allowed the researcher to get into the schools and teacher in specific for an in-depth inquiry into the phenomenon under study. Generally, the data collected were in two forms; views and feelings derived from experience and of words, not numbers, and the questionnaire used allowed generalization of information. Qualitative design served to clear ambiguity and verified the results obtained from the dominant quantitative design.

3.3. Target Population

Target population is a group of people that is identified as the intended participant for research. The target population for this study involved 13 secondary schools, 13 principals, 226 teachers in Mashuru District. County education office (2016). They were targeted since they were key to planning, integrating and evaluating ICT infrastructures, projects in their respective schools.

3.4. Sample Size and Sampling Technique

According to White (2003), a sample is a group of subjects or situations selected from a population. Sampling therefore is the act, process, or technique of selecting a suitable sample, or a representative part of a population for the purpose of determining parameters or characteristics of the whole population. According to Mugenda and Mugenda (2003) a sample of (30%) will be appropriate in social

science study. In this study the sample used was: 88 teachers as a result of sampling out (30%), all the 13 principals, and all the 13 schools in Mashuru District irrespective of their category.

3.5. Research Instruments

This study used a questionnaire, interview schedule as well as secondary sources to collect data from the filed. The main method of data collection will be the use of questionnaire. A questionnaire is a collection of items to which a respondent will be expected to answer in writing (Muntaz, 2000). This study used questionnaires to collect data from responses from principals and teachers. The main method of data collection was the use of questionnaire because the population was literate and this method collects information over a short period of time. The Principals was also engaged in the interview schedule, this enabled the researcher obtain information on Factors influencing ICT integration on resource planning in Mashuru District.

Use of questionnaire enabled the researcher get original views from the respondents hence bridging the hypothetical gaps in secondary sources to reach at a more informed conclusion. The first part of the questionnaire collected data on

Socio-economic background of the respondents. The second part of the questionnaire incorporated questions about the research topic covering all the objectives. Despite the loopholes in secondary sources such as outdated data and lack of focus in this study's area of interest, they formed the basis of this research. In fact, through documentary information, the researcher was able to learn about the diversity and complexity of ICT integration in schools and even teachers' attitude and this enabled the researcher prepare appropriately. The researcher used extensive literature written about ICT integration in schools and how it influences resource planning to

complement the data collected. Such literature was from sources such as, journals, articles from the website and books.

Mugenda & Mugenda, (1999), sensitizes that observation schedules record what the researcher observes during data collection. Observation tool is a method of collecting data in which a researcher notes things or occurrences as they occur naturally. In this study, the researcher prepared observation schedule on issues pertaining to ICTs in secondary schools. The researcher then observed and recorded the available ICTs in the targeted schools. The researcher observed the schools' environment for significant and relevant information pertaining to infrastructure of ICTs and their use. This was done because it exposed any hidden information that is not easily brought out by the questionnaire. A check list was used when making the observation**.**

3.6. Validity of the Instruments

Validity is the most critical criterion and indicates the degree to which the instrument used measures what it is supposed to measure. For example, the extent to which a measuring instrument provides adequate coverage of the topic under study, which was be determined by experts (content validity) and extent to which the instrument is relevant, free of bias, reliable and available (criterion validity) (McGarty and Haslam, 2003).

To achieve validity of research instrument, the considerations of Kothari (2004) were considered. First, it was ensured that the research instruments were adequate in scope and coverage, by including all the issues to be investigated. The researcher made sure that questions posed in the research instruments covered all the aspects that are in the conceptual framework and adequately encompassed the research questions. Secondly, to ensure that the questions are reliable and free of bias (criterion validity), the research instruments were reviewed by experts (supervisors) and pretested. The

following formula used to validate the Content Index Validity (C.V.I.) of the instrument.

$$\text{C.V.I.} = \frac{\text{Total Number of valid items}}{\text{Total number of items}}$$

In ascertaining the CVI, two research supervisors assessed the instrument by reviewing the instrument itself and make judgment concerning how well items represent their intended purpose. They then compare the invalid items against the valid ones and an average was computed. An average index found was 0.761 and this was above 0.7 hence the instrument was accepted as valid as suggested by (Amin, 2005).

3.7. Reliability of the Instruments

Mugenda and Mugenda (2003) define reliability as a measure of the degree to which a research instrument gives a consistent result after several repetitions.

Kothari (2004) argued that reliability is the consistency of measurement and is frequently assessed using the test retest reliability method. It is increased by including many similar items on a measure. The Teachers, principals will be given the questionnaires and the result computed along with the result form the pilot study. Then the two scores on the two occasions are correlated using the Pearsons product moment correlation coefficient.

$$r = \frac{\sum xy - (\sum x)(\sum y)/N}{\sqrt{(\sum x^2 - (\sum x)^2/N\,(\sum y)^2 - (\sum y)^2/N}}$$

Where $\sum$ xy = Sum of cross product of the values of each variable

$\sum$ y = Sum of y

N= Number of values of the scores

$\sum X^2$ = the sum of x^2

$(\sum x)^2$ = square of $\sum$ x

$(\sum y)^2$ =square of $\sum$ y

Reliability must measure 0.70 and above for the instrument to be judged and accepted as reliable for data collection (Amin, 2005).

3.8 Data Collection Procedure

The researcher obtained an introduction letter from the Department of Education, Nairobi University before actual data collection process. She presented it to the National Commission of Science, Technology and Innovation (NACOSTI) and got her research authorization letter and permit. She then proceeded to Kajiado County Commissioner and Education County Director for approval. From there, the researcher made appointments with school principals in Mashuuru district so that appointments can be made for data collection exercise to begin.

3.9 Data Analysis Techniques

The data collected was coded and entered in the computer for analysis using the Statistical Package for the Social Sciences (SPSS) version 21 for windows since SPSS is able to handle large amount of data, and given its wide spectrum of statistical procedures purposefully designed for social sciences, it is also quite efficient). Data presentation and analysis process entailed organizing and analyzing the accumulated mass of detailed information obtained from the field into a comprehensive research report. It involved typing and editing, tabulation and interpretation. This was done in line with study objectives.

Editing as a data management task helped to increase data quality, facilitate coherence, check completeness of data, ascertain consistency and institute accuracy. It also helped to determine the usability of the field information in realizing the research objectives and facilitate to signal areas that needed modifications or clarifications. Data analysis was done with the help of a research statistician. Qualitative data from the open-ended questions in the questionnaire was coded manually following a coding

frame, and analyzed following principles and processes of the thematic approach. Both the statistical and thematic analyses were synthesized to derive key interpretations and conclusions based on the study objectives.

The data was presented using frequency percentages, tables and pie charts analyzed according to the theme in the objectives. Regression analysis was then used to show the extent at which independent variables influenced the dependent variable. Correlation analysis was done to establish the relationship between independent variables.

3.10 Ethical Considerations

Researchers whose subjects are people or animals must consider the conduct of their research and give attention to ethical issues associated with carrying out their research (Kombo and Tromp, 2006). First, in order to concur with research protocol, the researcher sought written permission (Research Introduction Letter) from the university which acted as an official preface for her in the field. The researcher proceeded to the National Commission for Science, Technology and Innovation (NACOSTI) where she presented the Introduction Letter for her to get an Authorization Letter and Research Permit for data collection. Other letters from the county authorities were also secured as directed by NACOSTI.

The researcher also solicited approval from the district education office before carrying out the study. Finally, the researcher sought the permission of principals in schools in order to get views of teachers.

The participants were contacted in the study face to face whereby they were informed of the purpose and importance of the study. The researcher assured them confidentiality before, during and after the study. The researcher always bore in mind

that participants must agree voluntarily to participate in the study without physical or psychological coercion.

Additionally, to maintain confidentiality for participating teachers, numbers instead of names were used on the questionnaires. Informed consent of the respondents was also sought orally and the purpose of the study was explained to the respondents both orally and in written form. Information provided by the respondents was treated with much confidentially and respondents' anonymity was maintained. The necessary translation of the contents of the questionnaire was given to the respondents where necessary for proper understanding.

The researcher was open and honest with the participants about the aim and purpose of the study. This enabled the participants to agree with the researcher on the convenient time for data collection. Being open and honest to the participants during the entire investigation ensured that all information important to them was availed.

To safeguard unauthorized access to the questionnaire after data collection, the researcher always put them under lock and key in her cabinet. The researcher also secured her laptop from intruders by putting passwords so that no unauthorized access took place.

CHAPTER FOUR

DISCUSSION AND DATA ANALYSIS

4.1. Introduction

This chapter presents the analysis and discussion of the study findings. This study sought to investigate factors influencing ICT integration in Resource Planning in secondary schools in Mashuuru district, Kajiado County. Specifically, the study sought to establish the availability of ICT infrastructure, establish the level of training of personnel, determine the influence of the teachers' perception and establish the influence of principal age, all in the integration of ICT in resource planning in schools. This chapter presents analysis of the study findings. Data was gathered mainly using a questionnaire tool but interview schedule and observation tools were also employed for complimentary and argumentation purposes. Data from the questionnaire, interviews, group discussion and the observation checklist, addressing a particular research theme, in relation to the study objectives, are presented together. This approach enabled the researcher to collate research findings from questionnaire, interview schedule and the observation checklist.

Quantitative data from the questionnaire was presented using frequency tables, percentages and regression analysis. Percentages were rounded up to whole numbers. Data from interviews was content analyzed, that is, organized into around themes and presented in a qualitative manner. In some cases, the phrases and terms used by respondents are indicated. Qualitative data was used to verify and complement data obtained from quantitative analysis.

4.2. Social-demographic Characteristics of the Respondents

The study investigated five demographic characteristics that the researcher believed to have an implication on the study findings. They include; gender, age, department,

level of education, typed of employment and work experience. These demographic aspects were investigated in order to find out whether there were variations in the respondents' background and whether these had any influence on their views and in the overall research fidings.

4.2.1. Gender of the Respondents

The first aspect investigated was gender of the respondents.

Figure 4.1: Gender of the respondents

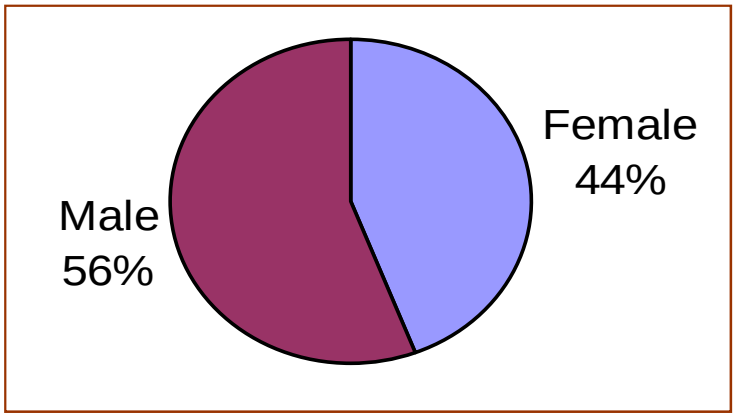
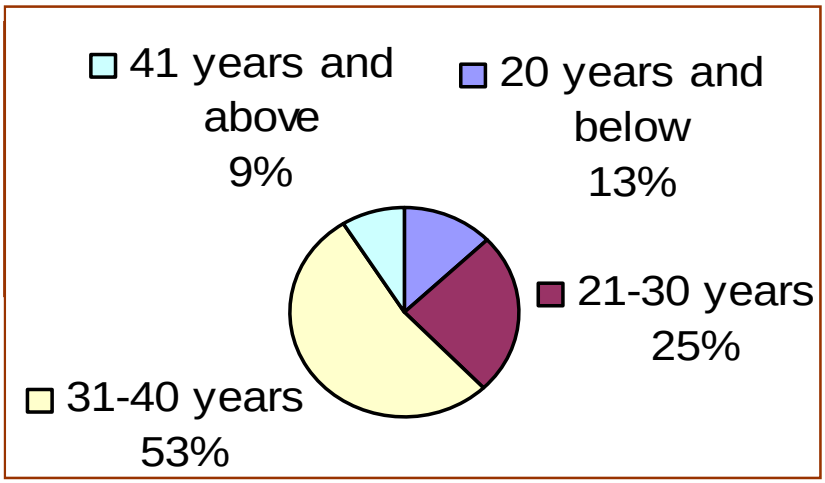


Figure 1 shows a disparity between the percentage of male teachers (56%) and female teachers (44%). This shows that in this study, male respondents were more than their female counterparts. This implied that views of male teachers dominated the study and this was taken into consideration during data analysis of other variables.

4.2.2. Age of the respondents

Figure 4.2: Gender of the respondents



The study shows that majority of the respondents were between the age bracket of 31-40 years (53%) followed by those between the age bracket of 21-30 years (25%). Those above 41 years were only (9%) while those below 20 years were (13%). This is an indication that most teachers in Mashuuru District Secondary Schools were between the age bracket of 21-40 years implying that they left college recently during the computer era. Therefore, they could have possibly come across basic computer training courses hence knowledgeable in ICT basics like Microsoft suit. The findings are in line with Kiilu (2012) who observed that young teachers in secondary schools have the advantage over old teachers in the use of ICT because they have gone through college education during the computer era. This has exposed them to various ICT knowledge and facilities even the most detached teachers from technology possibly are likely to have an idea or two about ICT.

4.2.3. Teachers' Department

The departments in which respondent teachers who participated in this study came from were also investigated.

Table 4.1: Departments of the respondents

	Frequency	Percent	Valid Percent
Technical	12	13.6	13.6
Humanities	15	17.0	17.0
Sciences	33	37.5	37.5
Mathematics	11	12.5	12.5
Languages	17	19.3	19.3
Total	88	100.0	100.0

Most of the respondents were from sciences (38%), followed by languages (19%), humanities (17%), technical (14%) and lastly mathematics (13%). This shows that

views of science teachers dominated the study. This was an advantage to this study since science teachers are likely to have more knowledge on ICT than teachers in other departments. According to Drent and Meelissen (2013), science curriculum contains many topics that need the indulgence of technology among the teachers during instruction. Higher institutions of learning that have embraced this need therefore endeavor to integrate ICT curriculum in the training of their teachers in order to equip them with the prerequisite ICT knowledge that will facilitate better practice and teaching methods in schools. The fact that science teachers dominated in this study could also be as a result that the researcher is a science teacher and knows others science teachers in the district since they meet in various education fields. This factor could have motivated the science teachers to participate in the study.

4.2.4. Employment Status

This study investigated the employment status of the respondents.

Table 4.2: Employment status

		Frequency	Percent	Valid Percent
Valid	Contract	6	6.8	6.8
	Casual	22	25.0	25.0
	Permanent	60	68.2	68.2
	Total	88	100.0	100.0

The study further revealed that teachers who were permanently employed were the majority accounting to (68%) They were followed by those casually employed (25%) and those under contract were only six accounting to (7%). Most teachers in Mashuuru District are under TSC. The fact that most schools are working under constrained budget, they cannot employ BOM teachers and this explains why there are few teachers on contract and under casual employment.

4.3.5. Work Experience

The work experience of the respondents was investigated.

Table 4.3: Age of the respondents

		Frequency	Percent	Valid Percent
Valid	Less than 1 year	14	15.9	15.9
	2-5 years	30	34.1	34.1
	6-10 years	32	36.4	36.4
	11 years and above	12	13.6	13.6
	Total	88	100.0	100.0

The study further established that teachers who had worked 6-10 years were the majority (36%) followed by those who has worked for 2-5 years (34%). Teachers who had worked for more than ten years were 14% and those who were still new in the teaching profession were (16%) who had taught for less than one year. This shows that about half of the respondents had worked for over five years thus had enough experience in schools to provide reliable information.

4.3. Influence of Availability of ICT in Integration of ICT in Resource Planning

The first objective of the study aimed at establishing the influence of the availability of infrastructure in integration of ICT in resource planning in schools. First, the study established the availability of ICT through the use of mean.

Table 4.4: Level of training of teachers in ICT

	N	Minimum	Maximum	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic
Printers	88	1.00	4.00	3.3636	1.06330
Desktops	88	1.00	4.00	3.3068	1.16814
Phones	88	1.00	4.00	3.2727	1.21037
Television	88	1.00	4.00	3.0455	1.35536
Laptops	88	1.00	4.00	2.8409	1.22133
DVD players	88	1.00	4.00	2.7955	1.39093
Projectors	88	1.00	4.00	2.6932	1.34214
Radios	88	1.00	4.00	2.6591	1.31207
Scanners and cameras	88	1.00	4.00	2.1932	1.32055
Tablets	88	1.00	4.00	2.0455	1.32100

As shown in table above, there was no ICT infrastructure that was highly available. Most ICT infrastructures were moderately available and they include printers, desktops, phones, television, laptops, DVD players, projectors and radios, with an average of mean of 3.36, 3.31, 3.27, 3.05, 2.81, 2.80, 2.69 and 2.66 respectively. Scanners, cameras and tablets were seldom available at low level with an average mean of 2.19 and 2.05 respectively.

According to FAWE (2015), a small number of schools have direct access to high-speed connectivity through an Internet service provider due to remoteness and high cost of implementation. Generally there is limited penetration of the national physical telecommunication infrastructure into rural and low-income areas. Consequently, there is limited access to dedicated phone lines and high-speed connectivity for e-mail and the Internet. This is because many schools in Kenya are constrained by resource scarcity.

Regression Model

Based on these findings on the availability of ICT infrastructure, the study established how this influenced the interaction of infrastructure in resource planning in schools using regression analysis.

$Ys = a + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + E$

Y is the dependent variable which is resource planning

a is the constant or the intercept .

β1….. β4 are the independent variables that include the availability of various ICT infrastructures. X1…X4 are the regression coefficients or the random variables to be observed or predetermined chosen fixed values .E is the error term; captures all the other variables or factors which influence the dependent variable other than the regression coefficients.

Table 4.5: Coefficient of Determination – R2 Combined

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.474[a]	.224	.215	6.43449

a. Predictors: (Constant), Availability of resources

The regression model's adjusted R-squared was 0.224 as indicated in table 4.5 below. The model therefore explains (22.4%) of resource planning as influenced by availability of resources as an independent variable. This therefore translates to the ten independent variables (Projectors, desktops, printers, tablets, phones, laptops, radios, television, DVD players, scanners and cameras) which explain (22.4%) of the factors influencing integration of ICT in resource planning in schools. The remaining (77.6%) is explained by other factors. This implies that school managers have tried to install ICT infrastructure in schools and the most common once being printers, desktops, phones, television, laptops, DVD players, projectors and radios.

Information gathered from the interviews revealed that most teachers hardly used ICT in schools since they lacked digital content to display. Those who were able to develop the content were few. Previous literature had revealed that there is a need to develop original educational content, adapt existing content, and convert print-based content to digital media. School administrators and teachers should have positive attitude and confidence in these facilities, which is in turn reliant on the facilities reliability or degree to which they are sure that they will have access to them at all expected times and utilize them predictably to the betterment of their work, an issue on which consensus is enormous as is clear from ICT in education scholars like Higgins & Moseley (2011), Khan et al., (2011), and Ayere et al., (2010).

Even though there was availability of ICT infrastructure in schools, the study established from the interviews conducted that there was lack of enough software to facilitate the integration of ICT. Commenting on such situations in secondary schools, a report by FAWE (2015) notes that education software, lack of internet access and email are lacking in schools. Moreover, a good number of teachers have not been trained in computer.

4.4. Influence of Training on Integration of ICT in Resource Planning

The second objective of the study sought to establish the level of training of personnel in integration of ICT in resource planning in schools. First, the study established the level of training of teachers on various ICT

Table 4.6: Level of training of the teachers

	N	Minimum	Maximum	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic
Google search	88	1.0	4.0	3.307	.8074
Microsoft word	88	1.00	4.00	3.2159	.86368
Emails	88	1.00	4.00	3.1477	.90388
Excel	88	1.00	4.00	2.7273	.95565
PowerPoint	88	1.00	4.00	2.5114	.93458
Access	88	1.00	4.00	2.3750	1.09662
Office tools	88	1.00	4.00	2.1932	1.07059
QuickBooks	88	1.00	4.00	1.8295	.89983

As shown in table 4.6 above, most respondents were not highly trained in ICT. The level of training on Microsoft word, emails, Google search and excel was moderate with mean average of 3.22, 3.15, 3.30 and 2.73 respectively. Training in power point, access, office tools and quick books showed a low level training with mean average of 2.51, 2.38, 2.19 and 1.83 respectively. The sum mean average for all the variables was 2.66 implying a moderate level of training. This indicates that, in average, teachers in Mashuuru district were moderately trained in ICT use.

The findings show that teachers are not fully trained in ICT skills. This agrees with previous literature noting that a major challenge identified in Kenya regarding integration and use of ICT in schools is that there few human resource staff, and where there are, they are most likely IT professionals without any education experiences, skills, and/or qualifications. However, many schools face a challenge of shortages of ICT teachers and other ICT professional that support adoption and use of ICT in resource planning purposes. Many schools continue losing well trained ICT teachers to private sector which seems to pay higher salaries (GOK, 2010).

Table 4.7: Coefficient of Determination – R2 Combined

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.381[a]	.145	.135	7.38776

a. Predictors: (Constant), Level of training

The regression model's adjusted R-squared was 0.145 as indicated in table 4.7 above. The model therefore explains (14.5%) of resource planning as influenced by level of training as an independent variable. This therefore translates to the eight independent variables (power point, excel, Microsoft word, access, QuickBooks, office tools, emails, Google search) which explain (14.5%) of the training factors influencing integration of ICT in resource planning in schools. Therefore, the remaining (63.1%) is explained by other factors.

The study findings agree with GOK (2010) report which indicates that inadequate preparation of human resource trainees on how to use ICT could be perceived as a reason why the adoption and integration has been hard. Another report by Ministry of Higher Education, Science and Technology on secondary school teachers' adoption and use of ICT also indicated the number of teachers skilled in ICT in secondary schools was low. The study revealed that out of the number available, few had ICT training effective in integration and use of the technology in schools. There is therefore a likelihood that teachers could integrate and use ICT if professional training provided them with ample time to learn, share, practice, and collaborate with colleagues about the technology as noted by Peeraer and Petergem (2011).

4.5. Perception of Teachers on the use of ICT in Resource Planning

The third objective of the study aimed at finding out the influence of the teachers' perception on the integration of ICT in resource planning in schools. Perception and attitude towards ICT use play a pivotal in determining whether teachers will integrate

ICT in schools. Positive attitude will enhance high utilization of ICT. The study first established the perception of teachers in the use of ICT in resource planning in schools and the results are shown in table 4.8 below.

Table 4.8: Perception of teachers on the use of ICT in resource planning

Variable	N	Minimum	Maximum	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic
Saves time	88	1.00	4.00	3.2841	.93402
Tasks	88	1.00	4.00	3.2273	.97941
Lesson preparation	88	1.00	4.00	3.2159	.86368
Like it	88	1.00	4.00	3.1136	.87667
Producing reports	88	1.00	4.00	3.0795	1.08513
Not hectic	88	1.00	4.00	2.8182	1.10947
Accomplishing much	88	1.00	4.00	2.7955	1.08447

Table 4.5 reveals that the respondents had moderate positive of perception towards the integration of ICT in resource planning in school. Teachers perceived that ICT saves time, helps them accomplish many tasks within a short time, eases lesson preparation, teachers generally like it, is efficient in producing reports, it is not hectic nor complicated to use and helps them accomplish much within a short times with a mean level of 3.28, 3.23, 3.22, 3.11, 3.08, 2.82 and 2.80 respectively. The average mean was 3.08 implying a moderate level of positive perception among the teachers on the use of ICT in resource planning of the school.

According to NEPAD (2015), teachers' Perception towards new technologies in secondary schools and its effects in integration and use shows that if teachers perceive use of ICT as either satisfying their own needs or their students' needs, it is likely

they would implement it in school. Attitude is brought about by other factors like teachers' competency, skills, knowledge and perception towards ICT.

Table 4.9: Coefficient of Determination – R2 Combined

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.206[a]	.043	.031	.80198

a. Predictors: (Constant), Perception of teachers

The regression model's adjusted R-squared was 0.043 as indicated in table 4.9 above. The model therefore explains (4.3%) of resource planning as influenced by teachers' perception as an independent variable. This therefore translates to the eight independent variables (saves time, performance of multiple tasks, lesson preparation, teachers love of ICT, producing reports, ICT being easy to use and accomplishing much work in a short time) which explain (4.3%) of the teachers' perception factors influencing integration of ICT in resource planning in schools. Therefore, the remaining 58.8% is explained by other factors.

The little influence of teachers' perception on ICT interaction could be as a result of other factors that influence perception like motivation from principals among other factors. That is why there is always mixed results on this subject matter. Huang & Liaw (2008) argue that teachers' perceptions are influenced by their acceptance of the usefulness of ICT and its implementation in schools. A survey by EU School net in 2010 (cited by Andoh, 2012) involving teachers' use of ICT in six European Union countries, revealed that a large number of participants perceived use of ICT had positive impact on their learning, elicited interest, promoted individualized learning and helped to lengthen study beyond school day. However, a study by Korte &

Husing (2007) suggested that small number of teachers perceived benefits of ICT in schools were not clearly identified. Some teachers viewed ICT as waste of time.

In line with this, Andoh (2012) notes that, regardless of the amount of technology and sophistication, technology will not be used unless school managers and teachers have the skills, knowledge and attitude necessary to infuse it into the curriculum and other school management processes and procedures. Perception of teachers towards the use of ICT thus remains a predetermining factor towards ICT use in schools. The findings thus indicate that perception in Mashuuru district accounts to only (4%) implying that little has been done to change the attitude of teachers towards ICT use in schools.

4.6. Influence of Principal Age on the Integration of ICT in Resource Planning in Schools

The fourth objective of the study aimed at finding out the influence of principal age on the integration of ICT in resource planning in schools. The results are indicated below.

Table 4.10: Coefficient of Determination – R2 Combined

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.468[a]	.219	.210	.86316

a. Predictors: (Constant), Age of the principle

The regression model's adjusted R-squared was 21.9 as indicated in table 4.10 below. The model therefore explains (21.9%) of resource planning as influenced by the age of the principle as an independent variable. This therefore explains (21.9%) of the principle's age factor affecting ICT integration in resource planning including; availing teaching resources, planning for infrastructure, attending to teachers' needs, preparing reports for teachers consumption, encouraging use of ICT and organizing

for teachers training in ICT. Therefore, the remaining (36.9%) should be explained by other factors possibly not captured in this study.

According to Kandiri (2012), the probability that teachers would use ICT in the classroom was limited by the reality that teachers who were educated 20 years ago were trained by people who themselves were trained before the arrival of computers in schools. Commenting on the same, Moreover, Peeraer & Petergem (2011) found out in a study that decisions of younger workers were more strongly influenced by their attitude toward using the new technology. In contrast, older worker were more strongly influenced by subjective norm and perceived behavioral control. Then, these groups of people adopt very different decision processes in evaluating new technologies. On the other hand, Khan & Inamullah (2011) found that age was not a significant factor in relation to teachers' attitudes towards ICT.

Table 4.11: Significant Differences Between the groups

		Sum of Squares	df	Mean Square	F	Sig.
Availability of Infrastructure	Between Groups	3459.648	41	84.382	3.430	.000
	Within Groups	1131.625	46	24.601		
	Total	4591.273	87			
Teachers' Training	Between Groups	1621.825	41	39.557	2.381	.002
	Within Groups	764.175	46	16.612		
	Total	2386.000	87			
perception of Teachers	Between Groups	1173.214	41	28.615	1.505	.089
	Within Groups	874.683	46	19.015		
	Total	2047.898	87			
Principal Age	Between Groups	50.455	41	1.231	1.790	.028
	Within Groups	31.625	46	.688		
	Total	82.080	87			

The results in table 4.18 below reveal that there are significant differences in the responses for the three variables, availability of infrastructure (0.000), level of teachers' training in ICT (0.002), perception of teachers (0.089) and principle's age (0.028). The differences in the mean responses from the groups could be as a result of management planning and implementing issues without proper consideration and consultation with the teachers and non teaching staff members of the schools as revealed in the open ended questions. Another possible reason would be because the teachers have actually allowed the non teaching staff to do ICT related tasks for them. Hence, the teachers are not aware of what exactly the management is doing in terms of implementation of ICT in resource planning in schools. It could also mean that the schools have many teachers with ICT skills, but do not bother to utilize ICT infrastructure in the planning of the resources both in and outside class.

The researcher during the movements in schools observed that a number of schools had quite numbers of computers but most of them were not in use. However, the researcher came across some teachers who had their personal computers including laptops and tablets and other ICT devices like printers. The researcher tried to ask as to why they preferred personal computers. Respondents said that the school computers were not operation and the few that were operational lacked important content in terms of software and planning applications.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

This Chapter presents the summary, conclusion and recommendations of the study findings.

5.2. Summary

This study sought to investigate factors influencing ICT integration in Resource Planning in secondary schools in Mashuuru district, Kajiado County. Specifically, the study sought to establish the availability of ICT infrastructure, establish the level of training of personnel, determine the influence of the teachers' perception and establish the influence of principal age, all in the integration of ICT in resource planning in schools. The study employed descriptive survey design with both qualitative and quantitative approaches targeting 13 secondary schools teachers in Mashuuru district. A sample of 88 respondents was randomly selected to participate in the study while 13 principals were purposefully selected and interviewed for argumentation purposes of the study findings. Data was mainly collected using a questionnaire tool. Structured interviews were also used in collecting quality data from the principals.

The study established that views of male respondents (56%), those between 31-40 years (53%), respondents in sciences (38%), permanently employed (68%) and respondents who had worked for over two years (84%) dominated this. Having respondents who were mature, under permanent employment status and with considerable work experience implies that they were in a position to provide reliable data to enable the researcher arrive at informed conclusion. The study established that most schools had desktops, phones, television, laptops, DVD players, projectors and radios, with an average of mean of 3.36, 3.31, 3.27, 3.05, 2.81, 2.80, 2.69 and 2.66

respectively. Based on linear regression, availability of ICT infrastructure, R-squared was 0.224which explained (22.4%) of the factors influencing integration of ICT in resource planning in schools. This implies that infrastructure availability played a significant role in the integration of ICT in resource planning in schools.

Regarding teachers training, the study found out that most teachers were well trained in Microsoft word, emails, Google search and excel was moderate with a mean average of 3.22, 3.15, 3.30 and 2.73 respectively. The regression model's adjusted R-squared was 0.145 which explain (14.5%) extent at which training factors influenced integration of ICT in resource planning in schools.

Regarding the perception of teachers, the study established that teachers perceived that ICT saves time, helps them accomplish many tasks within a short time, eases lesson preparation, teachers generally like it, is efficient in producing reports, it is not hectic nor complicated to use and helps them accomplish much within a short times with a mean level of 3.28, 3.23, 3.22, 3.11, 3.08, 2.82 and 2.80 respectively. The average mean was 3.08 implying a moderate level of positive perception among the teachers on the use of ICT in resource planning of the school. Moreover, the regression model's adjusted R-squared was 0.043 as indicated in which explains (4.3%) of the teachers' perception factors influencing integration of ICT in resource planning.

Finally, the study established that the age of the principal also influenced ICT integration in resource planning in schools. The regression model's adjusted R-squared was 21.9 as which explains (21.9%) of resource planning as influenced by the age of the principle as an independent variable. This therefore explains (21.9%) of the principle's age factor affecting ICT integration in resource planning including; availing teaching resources, planning for infrastructure, attending to teachers' needs,

preparing reports for teachers consumption, encouraging use of ICT and organizing for teachers training in ICT. Therefore, the remaining (36.9%) should be explained by other factors possibly not captured in this study.

5.3. Conclusions

Based on the study findings, the study concluded that many schools in Mashuuru district had quite considerable enough ICT infrastructure that can necessitate the utilization of the same in resource planning in schools. Quite a good number of teachers were also trained in ICT and this is attributed to the fact that most of the teachers were young. They had the prerequisite skills needed in the use of ICT in schools. This is why possibly the analysis showed a great influence of ICT infrastructure and training on ICT interaction in resource planning in schools. Perception of teachers towards ICT integration had an influence. This implies that, provided ICT is available, teachers are trained and the principals have the good will, teachers are likely to employ ICT in resource planning in schools. Generally, it was concluded that availability of ICT infrastructure, training and principals' age greatly influenced the integration of ICT in resource planning in schools.

5.4. Recommendations

Based on the findings, the study recommended the following:

i. Since some schools were having inadequate ICT infrastructure, school principals in liaise with educational officials and the government should endeavor to provide adequate ICT infrastructure in all the schools.
ii. There is need for schools principals to support teachers for profession growth studies in the line of ICT. Teachers should also make effort to acquire ICT skills so that they can employ the same in resource planning.

iii. Since the principal's age play a great role in influencing ICT integration in schools, there is need for the education ministry to make sure that more young principals trained in ICT take the managerial leadership in schools. This will help provide an environment where teachers and the rest of the school workers are encouraged to use ICT in resource planning.

iv. The challenge of electricity was cited as one of the hindrances to the integration of ICT in schools. There is need therefore for the government to make sure that all secondary schools are provided with adequate and constant electricity.

v. Teachers should also endeavor to buy their own computers and laptops so that they can improve on the art of ICT usage in resource planning.

vi. Moreover, there is need for the Ministry of Education to develop ICT content since there is still the challenge of inadequate content especially in regard to resource planning and curriculum development.

vii. There is need to carry out further research to establish other factors influencing ICT integration in resource planning in secondary schools.

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APPENDICES

Appendix I: Letter of introduction

Everlyne Kerubo M. Asibah
University of Nairobi
Kikuyu Campus
P.O. Box 92
Kikuyu

The Principal,
Elerai M C K Sec School
Box 435
Sultan Hamud,

Dear Sir/madam,

RE: REQUEST TO CARRY OUT RESEARCH

I am a student at University of Nairobi pursuing a Master Degree in Educational planning. I kindly request to carry out my research in your school. The research topic focuses on the **Factors influencing the integration of ICT in Resource planning in secondary schools in Mashuuru District, Kajiado County.** Please allow me to collect data in your school. Thank you for your cooperation.

Yours sincerely,

Asibah K.M Everlyne

Appendix II: Questionnaire for Teachers

Dear respondent,

I am a student of Nairobi University pursuing a Master Degree in Education Planning and Administration. This study seeks to investigate factors influencing ICT integration in Resource Planning in secondary schools in Mashuru district, Kajiado County. You have been selected to participate in the study by giving your views and opinions. You are therefore requested to respond to the items below. The information given will be treated with confidentially and will be used for academic purposes only.

Thank you for your valuable time and input.

Section A.

Demographic data

You are requested to answer each question. Indicate your choice by ticking in the box provided **(√)**

1. **Indicate your gender**

Male ☐

Female ☐

2. Indicate your Age

20 years and below ☐

21-30 years ☐

31-40 years ☐

41-50 years ☐

50 years and above ☐

3. Which department do you belong to?

Technical ☐

Humanities ☐

Sciences ☐

Mathematics ☐

Languages ☐

4. Your education level.

Certificate ☐

Diploma ☐

Degree ☐

Masters and above ☐

5. Type of employment

Contract ☐

Casual ☐

Permenent ☐

6. How many years have you been working as a teacher?

Less than 1 year ☐

2-5 years ☐

6-10 years ☐

10 years and above ☐

Section B

1. **Availability of ICT infrastructures in schools and integration of ICT in resource planning**

Rate the availability of the following ICT facilities in your schools

Key: 1. Available 2. Sometimes Available

3. Hardly Available 4. Not Available

Infrastructure	1	2	3	4
Projectors				
Desktop computers				
Printers				
Tablets				
Laptops				

2. Influence of infrastructure availability and the integration of ICT in resource planning.

How often has the availability of ICT infrastructure influenced the planning of the following in your schools? Use the key below.

Key: 1. Very often 2. Often 3. Sometimes 4. Never

Resource planning	1	2	3	4
Preparing for lessons				
Preparing for schemes of work				
Preparing for exams				
Timetabling				
Producing of reports				

3. Level of teachers' training in ICT and the integration of ICT in Resource Planning

Rate your level of training in the following areas below using the following key.

1. Very efficient 2. Efficient 3. Somehow efficient 4. Inefficient

Training	1	2	3	4
PowerPoint				
Excel				
Microsoft word				
Access				
Quick books				
Office tools				
Emails				
Google search				

4. Influence of ICT training and integration of ICT in resource planning

How has your training in ICT influenced you in carrying out the following activities? Use the key below.

Key: 1. Very often 2. Often 3. Sometimes 4. Never

Training	1	2	3	4
Lesson planning				
Reports writing				
Scheming of school work				
Preparing notes for the future				
Departmental planning				
Co-curricular activities planning				
Planning for seminars and workshops				
Teaching resource mobilization				

5. Teachers' perception on ICT integration in resource planning

Rate the following according to how you think it applies to you when using ICT.

Key: 1. Very often 2. Often 3. Sometimes 4. Never

Perception	1	2	3	4
Easy to use in lesson preparation				
Accomplish much at school when using ICT				
Efficiency in producing reports				
Accomplishes many tasks in a short time				
It is for male teachers only				

6. Influence of principal age on the integration of ICT in resource planning in schools.

Rate on you think the age of your principal has influenced the use of ICT in school?

Key: 1. Very often 2. Often 3. Sometimes 4. Never

Principals Age	1	2	3	4
Availing for teaching resources				
Planning for school infrastructure				
Attending to teachers needs and welfare				
Preparing reports for teachers consumption				
Preparing				

Appendix III: Questionnaire for School Principals

1. Availability of ICT infrastructure and integration of ICT in resource Planning in schools

a). Do you have ICT infrastructure and equipments in your school? Yes ☐ NO ☐

If yes, list them.

……

……

……

b). List the persons who uses those ICT facilities and equipments.

……

……

……

2. Influence of infrastructure availability and the integration of ICT in resource planning.

a). How has the availability of ICT infrastructure in your school assisted in resource planning of resources?

……

……

……

3. Level of teachers' training in ICT and integration of ICT in Resource Planning

a). Do you have any training in ICT? Yes ☐ NO ☐

If yes, in which area or areas?

……

……

……

b). Are there other teachers trained in ICT in your school? Yes ☐ No ☐

If yes, name them.

……

……

……

c). Which areas are you trained in?

……

……

……

4. <u>Influence of ICT training on resource planning</u>

a). Do you think the teachers' training in ICT has supported in the planning of school resources? Yes ☐ No ☐

If yes, how?

……

……

……

a). Do you think the non teaching staffs' training in ICT has supported in the planning of school resources? Yes ☐ No ☐

Give reasons for your answer.

……

……

……

a). Do you think your training in ICT or lack of it has affected you in the planning of school resources? Yes ☐ No ☐

Give reasons for your answer.

……

……

……

5. <u>Teachers' perception on ICT and influence of ICT and integration in resource planning</u>

a). Do you think ICT facilities and equipments are important for teachers' planning of school resources? Yes ☐ No ☐

Give reasons for your answer.

……

……

……

a). What is the attitude of teachers towards the use of ICT facilities and equipments in planning of school resources?

……

……

……

a). What is the perception of teachers towards the use of ICT facilities and equipments in planning of school resources?

……

……

……

6.Influence of principal age and integration of ICT in resource planning in schools.

a). Do you think your age has affected your perception towards the use of ICT in school?

If yes, how? Yes ☐ No ☐

……

……

……

b). Do you think your age has affected your attitude towards the use of ICT infrastructure in school? Yes ☐ No ☐

If yes, how?

……

……

……

Appendix IV: Observation Checklist

Things observed in schools

1. Number of personal computers
2. Number of schools computers
3. Presence of electricity
4. Number of computer peripherals like laptops
5. Availability of computer labs
6. Use of computers in schools
7. Arrangement of the ICT infrastructure

Appendix V: University Introduction Letter

UNIVERSITY OF NAIROBI
COLLEGE OF EDUCATION AND EXTERNAL STUDIES
SCHOOL OF EDUCATION
DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND PLANNING

Telegram: "CEES"
Telephone: 020-2701902
dept-edadmin@uonbi.ac.ke

P.O. BOX 30197 NAIROBI
OR P.O. BOX 92 - 00902
KIKUYU

27/6/2016

Our Ref: UON/CEES/SOE/A&P/1/4

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

SUBJECT: **ASIBAH EVERLYNE M. KERUBO - REG NO. E55/72385/2014**

This is to certify that **Asibah Everlyne Kerubo** is a Master of Education student in the Department of Educational Administration and Planning at the University of Nairobi. She has completed her course work and is summarizing her research on "***Factors Influencing the Integration of ICT in Resource Planning in Secondary Schools in Mashuuru District, Kajiado County, Kenya***". She is specializing in Educational Planning.

Yours faithfully,

Dept. of Ed. Admin. & Planning
Chairman's Office
27 JUN 2016
P. O. Box 92 - 0902

DR. JEREMIAH M. KALAI
CHAIRMAN
DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND PLANNING

JMK/hd

Appendix VI: NACOSTI Introduction Letter

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email:dg@nacosti.go.ke
Website: www.nacosti.go.ke
when replying please quote

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

Ref: No.

NACOSTI/P/16/92931/13002

Date:

10th August, 2016

Evalyne Asiba Kerubo
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Factors influencing the integration of ICT in resource planning in secondary schools in Mashuuru District Kajiado County Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Kajiado County** for the period ending **9th August, 2017.**

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

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

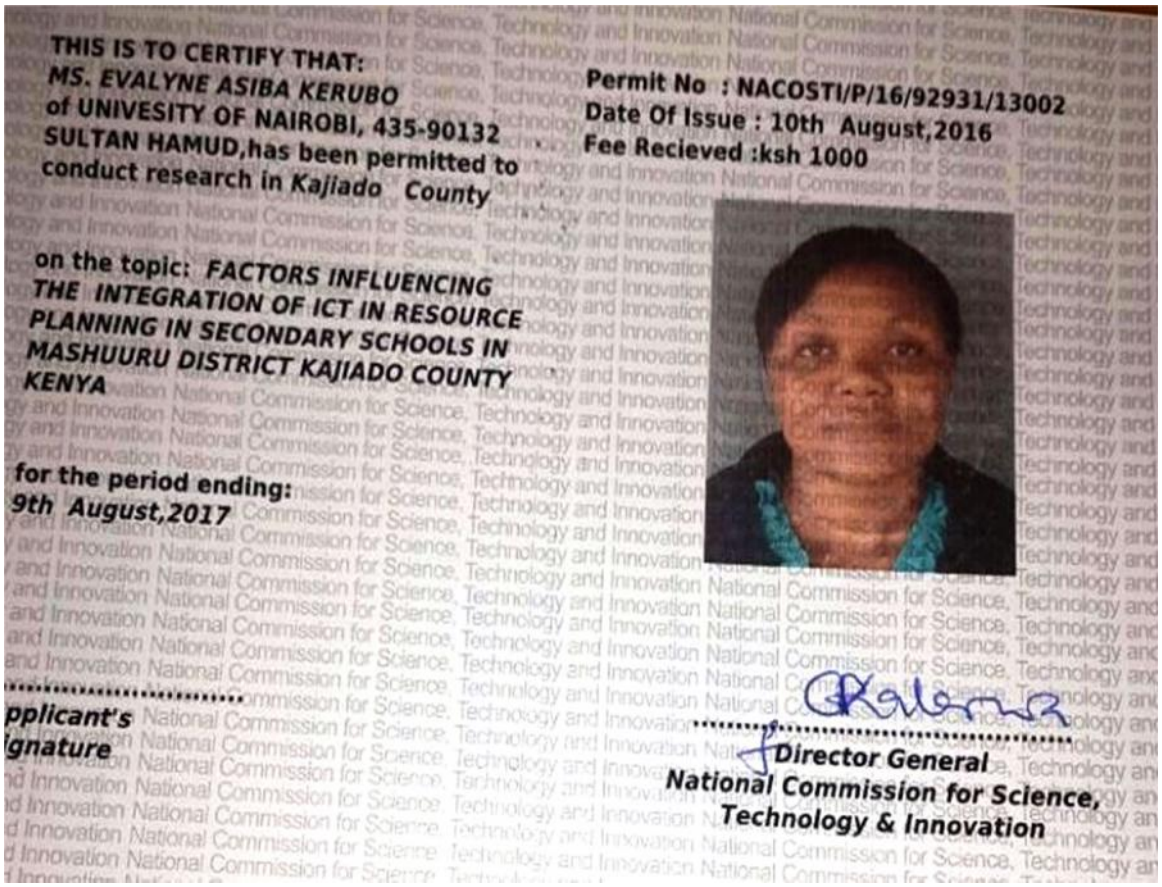
GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Kajiado County.

The County Director of Education
Kajiado County.

Appendix VII: Research Permit



THIS IS TO CERTIFY THAT:
MS. EVALYNE ASIBA KERUBO
of UNIVESITY OF NAIROBI, 435-90132
SULTAN HAMUD,has been permitted to
conduct research in Kajiado County

Permit No : NACOSTI/P/16/92931/13002
Date Of Issue : 10th August,2016
Fee Recieved :ksh 1000

on the topic: FACTORS INFLUENCING THE INTEGRATION OF ICT IN RESOURCE PLANNING IN SECONDARY SCHOOLS IN MASHUURU DISTRICT KAJIADO COUNTY KENYA

for the period ending:
9th August,2017

.....
pplicant's
ignature

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

Appendix VIII: Letter from County Commissioner

THE REPUBLIC OF KENYA

THE PRESIDENCY

Telegrams: "DISTRICTER", Kajiado
Telephone: 0203570295
Fax: 0202064416
E-mail: kajiadocc2012@yahoo.com
Kajiadocc2012@gmail.com
When replying please quote

MINISTRY OF INTERIOR
AND COORDINATION
OF
NATIONAL GOVERNMENT

OFFICE OF THE COUNTY
COMMISSIONER
KAJIADO COUNTY
P.O BOX 1-01100
KAJIADO

Ref. KJD/CC/ADM/45 VOL. 1(10) **11th August, 2016**

Evalyne Asiba Kerubo
University of Nairobi
P.O BOX 30197 – 00100
NAIROBI

RE: RESEARCH AUTHORIZATION- EVALYNE ASIBA KERUBO

Following the request made on your behalf by National Commission for Science, Technology and Innovation vide **letter Ref. No.NACOSTI/P/16/92931/13002** dated 10th August, 2016.

You are hereby granted the above authority to carry out research on ***"Factors influencing the integration of ICT in resource planning in secondary schools " in Mashuuru Sub- County for*** a period ending ***9th August, 2017.***

It is expected that you adhere to research ethics in doing your study.

MBISO JACK
FOR: COUNTY COMMISSIONER
KAJIADO COUNTY.

C.C
County Director of Education
KAJIADO COUNTY.

Deputy County Commissioner
MASHUURU SUB - COUNTY.

Appendix IX: County Director of Education Letter

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
STATE DEPARTMENT OF EDUCATION

Email :cdekajiado@gmail.com

When replying please quote

COUNTY DIRECTOR OF EDUCATION
KAJIADO COUNTY
P.O. BOX 33 - 01100
KAJIADO

Ref: KJD/C/R3/VOL.1/184

11th August, 2016

Evalyne Asiba Kerubo
University of Nairobi
P.O. Box 30197-00100
NAIROBI

RE: RESEARCH AUTHORIZATION

The letter from the National Commission for Science, Technology Innovation **Ref.NACOSTI/P/16/92931/13002 dated 10th August, 2016.**

This is to confirm that you have been authorized to conduct a research on " **Factors influencing the integration of ICT in resource planning in Secondary School in Mashuuru Sub–County, Kajiado County, Kenya ",** for a period ending **9th August, 2017.**

All the relevant stakeholders / concerned people are kindly requested to assist her with the relevant information and data.

COUNTY DIRECTOR OF EDUCATION
KAJIADO COUNTY

GEDION M. MBINDA
FOR: COUNTY DIRECTOR OF EDUCATION
KAJIADO COUNTY