

**FACTORS INFLUENCING PRINCIPALS' INTEGRATION OF
INFORMATION COMMUNICATION TECHNOLOGY IN THE
ADMINISTRATION OF PUBLIC SECONDARY SCHOOL IN VIHIGA
COUNTY , KENYA.**

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**A Research Project Submitted in Partial Fulfilment of the Requirement
for the Award of the Degree of Master of Education (Administration) .**

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DECLARATION

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



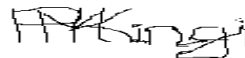
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DEDICATION

First I dedicate this research to my parents Mr. Jafred Makokha and Mrs. Eunice Makokha. Thank you for your spiritual and moral support throughout my period of study. Secondly, to My brother Nicholas Kokis for your encouragement that made me work even much harder and lastly to my lovely nephews Amellia and Beckham Makokha for acknowledging that am your role model in all my endeavours.

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ABBREVIATIONS AND ACRONYMS

DFID	Department for International Development.
EMIS	Education Management Information System
GIS	Geographic Information System
GOK	Government of Kenya
ICT	Information Communication Technology
KESI	Kenya Education Staff Institute
KICD	Kenya Institute of Curriculum Development
MOE	Ministry Of Education
MOEST	Ministry Of Education Science and Technology
NGOs	Non-Governmental Organizations
UNECA	United Nations Economic Commission for Africa
UNICEF	United Nations International Children Emergency Fund
UNESCO	United Nations Educational, science and cultural organization.
USAID	United States Agency for International Development

ABSTRACT

Integration of ICT in the administration of public secondary schools is one way of enhancing education in Kenya. However, most schools are yet to integrate technology despite being endowed with ICT resources, numerous government policies on ICT and donations of ICT resources by education partners and other players. Thus, this study focused on exploring the factors influencing integration of ICT in the administration of public secondary schools in Kenya. In particular, the research focused on four specific objective which assessed how the use of ICT, mobilization of ICT infrastructure, accessibility to ICT infrastructure and ICT literacy influences school principals' integration of ICT in administration of public secondary schools in Vihiga County, Kenya. The research was guided by activity theory (Kuuth, 1996) that involves integration of technology as tools to mediate social action. Descriptive research survey design was used to carry out the study where the target population was the 160 public secondary schools in Vihiga County and the unit of observation where 160 BOM chairs, 160 BOM secretaries, 160 Parents' Association chairs, and 576 Heads of Departments and 5 QASOs. The sample size which formed the unit of analysis involved; 40 BOM chairs, 40 BOM secretaries, 40 PA chairs, and 135 Heads of Departments and 4 QASOs selected by using both simple random and purposive sampling. The study employed a questionnaire and interview guide to collect data. Descriptive statistics involved the use of frequencies, means and standard deviations. Qualitative data was coded into relevant themes for interpretation while inferential statistics involved Pearson correlation coefficient which was employed to ascertain the degree to which independent variables exert effect on the dependent variable. The findings of the study indicated that there is a strong positive correlation between the use of ICT (0.736), mobilization of ICT infrastructure (0.594), accessibility to ICT infrastructure (0.683) and ICT literacy (0.745) and ICT integration in the school administration. The correlation coefficient of the four variables suggest a positive relationship between the variables ($p=0.001$). However, the study noted a number of challenges hindering the ICT integration in the school administration. Therefore, it recommended the need of addressing the challenges in order to improve ICT integration in the school administration.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

ICT encompasses electronic devices such as computers, calculators, digital recording equipment, as well as software applications and information systems (Suleiman, Anyanful, & Abdullahi, 2018). Gharifekr, Razak, Ghani, Ran, Meixi, and Tengyue (2017) define ICT as a collection of technologies including software, computers, networks, and satellite linkages. These technologies enable users to generate, analyze, share, access, and utilize information and knowledge in diverse ways. According to Canton & Danowski (2015), ICT refers to the process of utilizing internet wireless networks, cell phones, and other media to access, retrieve, display, and save information. According to Behnam (2019), ICT integration refers to the integration of various technological tools such as computers, the internet, satellites, CD-ROMs, teleconferencing, and interactive media in education. The purpose of this integration is to provide support, inspiration, enhancement, and creation of learning experiences. ICT integration, as defined by the National Centre for Education Statistics (2019), refers to the integration of ICT resources and technology into the regular activities of teaching and learning.

The 2017 report by the European Union on digital policies highlights the increasing importance of using information and communication technology (ICT) in education as a key policy focus throughout Europe. The purpose of this is to guarantee the efficient incorporation of information and communication technology in the management of European schools (EU,

2017). In order to track the implementation and spread of ICT in teaching and learning throughout European schools, many monitoring tools have been utilized, such as the European School Net and the University of Liege (2017). The study on ICT utilization, employing two measures, encompassed 27 European nations. The findings indicated that ICT was effectively incorporated into the processes of teaching and learning. Reports from several networks analyzing the European education system and regulations regarding the integration of information and communication technology (ICT) have demonstrated the utilization of ICT infrastructure in the education and curriculum of European nations (EU, 2017). The data collected on elementary and secondary education in 31 European nations indicated that there was sufficient information and communication technology (ICT) infrastructure, and that ICT was effectively incorporated into European education (Michalakis, Vaitis & Klonari, 2017).

In Scotland, the Scottish government in collaboration with the United Kingdom has worked together with other players in education sector to improve the quality of education by integrating ICT. Integration of ICT has been realized in management, teaching and learning activities (Harlow & Cowie, 2018). The use of ICT has steadily increased among institutions and many schools have achieved baseline computer-to-student ratio targets. Development and reforms in the Scottish curriculum have necessitated the provision of internet services to both teachers and learners which has enabled effective integration of ICT in education hence effective teaching and learning and overall management of schools. In Bangladesh, the Bangladeshi government incorporated ICT in the management of public institutions.

Through the ministry of education, the Government of Bangladesh developed policies on the use of ICT in education and training to enable learners and school principals' to adapt to management challenges emanating from technological improvement and globalization. ICT has been mainly incorporated in the areas of management of finance, co-curricular activities, infrastructure and human resource management, Mahadi (2016).

According to UNESCO's (2011) study on the variables that affect the integration of digital technology in schools, it was found that poor nations are more likely to face obstacles in using ICT. Furthermore, it has been shown that schools in South America, Africa, and Asia are plagued by the lack of access to operational computers, a scarcity of technical and administrative assistance, an unstable power grid, and insufficient teacher training. These factors have impeded the successful integration of information and communication technology (ICT) in schools. According to a research conducted by UNESCO in 2014, the main barrier to integrating ICT in education in India and other impoverished countries such as Nepal and Cambodia is the lack of power. The survey found that just 24% of schools in Nepal and 7% of schools in Cambodia have access to electricity.

In Africa, there have been endeavors to achieve the integration of ICT in the teaching, learning, and administration of schools. A number of African countries have prioritized the establishment of national ICT policies and national information and communication infrastructure plans to support their socioeconomic development efforts and initiatives for integrating ICT in education. Several countries have used Information and Communication

Technology (ICT) into their education system in order to accomplish important strategic development goals. South Africa has made substantial advancements in integrating ICT into their education system by implementing enabling legislation, establishing proper institutional regulatory frameworks, and successfully implementing projects to give computer laboratories and internet access to schools. According to the World Bank (2017), power supply was available in 85% of South African public schools by 2009. In Egypt, the integration of Information and Communication Technology (ICT) has been used in school management to enhance the efficiency of teaching, learning, and administrative processes. This initiative has been financially supported by the World Bank, specifically through the Ministry of Education and Technology in 2017. The reform was launched during the academic year 2018-2019 by the World Bank. It focused on improving early childhood education, enhancing the skills and abilities of teachers and leaders, improving service delivery through interconnected systems and management, and strengthening communication and monitoring and evaluation processes (Saavedra, 2019; World Bank, 2018). Despite encountering various obstacles during the implementation phase such as a lack of ICT infrastructure, inadequate internet connectivity, and insufficient power supply, the ministry of education has declared the successful attainment of numerous targeted objectives (UNICEF, 2019), resulting in the improved integration of ICT in Egyptian schools. Ghana has developed extensive ICT policies and made a significant investment to promote the integration of ICT in school administration (Hitachi, 2009). ICT is presently a crucial component of Ghana's education strategic plan. For example, Ghana implemented an

intervention program called the "one laptop per child policy" with the objective of improving teaching and learning, as well as the use of ICT in administration. This initiative was initiated by Enu, Nkum, Ninsin, Diabor, and Korsan in 2018. In Uganda, significant endeavors have been undertaken to cultivate information and communication technology (ICT) infrastructure. EMIS has been backed by many development partners such as the World Bank, USAID, and DFID. These partners have decentralized EMIS to districts and included GIS capabilities into the system. EMIS in Uganda has encountered several obstacles, including incorrect data, sluggish decentralization of ICT due to a dearth of human resources in EMIS, and inadequate equipment maintenance (World Bank, 2017). The Tanzanian government has adopted the technological pedagogical content knowledge (TPACK) framework and implemented the ICT for teachers professional development (ICT-TPD) program, as outlined in the basic education policy (Swart & Wachira, 2010). The aim of ICT-TPD was to enhance the utilization of information and communication technology by teachers in the education system of Tanzania. The target was predominantly achieved, notwithstanding several obstacles such as inadequate ICT proficiency and limited ICT availability among certain educators.

The Kenyan government has implemented many initiatives to promote the utilization of Information and Communication Technology (ICT) throughout the country. Some of the policies implemented in Kenya include the National ICT policy (2006), Kenya vision 2030 (2008), MOEST ICT policy (2006), and the initiation of the National Education Sector Support Program (NESSP 2013-2018) by the MOEST. The NESSP was designed to guide the country's

investment in education and training over the next five years, with a primary focus on promoting the use of ICT in schools, colleges, universities, and other institutions to enhance the quality of education services. Education in Kenya has included computers through the implementation of Education Management Information Systems (EMIS). EMIS has streamlined school management by providing a platform for storing data on students and staff, financial records, policies, property upkeep, and other relevant information. This has facilitated the effortless gathering, analysis, and dissemination of educational data for the purpose of making informed decisions. Although the Government has made efforts to implement the use of ICT in the management of public secondary schools, principals are still falling behind in their utilization of ICT. Nyanchoka's (2015) survey found that 75% of the respondents and 60% of the school principals utilized computers, whereas only 40% sought assistance from technicians. This number is significantly inadequate, given that principals should have a prominent role in the integration of ICT. Teachers also observed that the incorporation of ICT in school administration was hindered by the lack of awareness among administrators regarding the significance of ICT in education. The Kenya Institute of Curriculum Development (KICD) asserts in 2017 that the utilization of Information and Communication Technology (ICT) is not discretionary, but rather an essential need. Consequently, this obliges school administrators to incorporate ICT into their systems to guarantee the efficient administration of school operations.

Multiple studies have verified that the availability of ICT resources in Kenyan public secondary schools is currently limited. Principals are facing diverse

difficulties in obtaining ICT infrastructure for the management of public secondary schools. The obstacles encompass issues such as limited internet access, insufficient power supply, inadequate availability of computers in classrooms, insufficient computer proficiency among teaching personnel, and inadequate technical assistance. A research conducted by Musambi, Ndirangu, and Mukhwana (2017) found that the primary obstacle affecting principals in the incorporation of ICT in the management of public secondary schools is the absence of internet access, as well as insufficient technical resources and PCs. Kimuyu, Kalai, and Okoth (2016) found that a majority of schools (71.4%) lacked internet connectivity, which hindered their ability to utilize ICT for management purposes. In Nyanchoka's (2015) survey, it was found that 65% of the public secondary schools had access to dependable internet, whilst 35% did not. Based on earlier research conducted in Bungoma, it was found that 75% of public secondary schools own a quantity of 1 to 10 computers, while 25% have a range of 11 to 40 computers, all of which are equipped with power. The lack of infrastructure has impeded principals' capacity to incorporate ICT into the management of public secondary schools.

Schools have not yet included ICT in their administrative operations due to a lack of ICT infrastructure (Suffer & Kihara, 2019). Consequently, principals are taking steps to utilize ICT resources from other sectors to integrate it into the administration. This is to guarantee that the school have a sufficient quantity of accessible resources for the integration of ICT. In a study conducted by Musambi, Ndirangu, and Mukhawa (2017), it was found that 86% of the participants acknowledged that engaging stakeholders in the process of mobilizing information and communication technology (ICT)

infrastructure in schools enhances the utilization of ICT in educational institutions. Principals secure government funds by requesting government funding for ICT infrastructure through the ministry of education. The ministry of education, specifically through the special education program on ICT, provides financial support for projects such as building computer laboratories, acquiring computers, and providing free WIFI. Principals collaborate with both local and international partners to secure gifts of ICT infrastructure. The contribution might consist of computer software or hardware that aids the school in the incorporation of Information and Communication Technology (ICT). Principals engage local lawmakers by utilizing CDF funds, allowing members of parliament to get ICT infrastructure for schools under their jurisdiction. The school can obtain the required infrastructure for ICT integration through the mobilization of ICT resources.

Several nations have used ICT to transform the methods of teaching, learning, and school management. Consequently, it is imperative for teachers to get comprehensive training in order to guarantee the successful integration of ICT. According to Mbithe (2016), instructors who are digitally literate and possess the knowledge of integrating ICT into the curriculum should incorporate it. In Greece, two training programs were implemented in Greek schools to promote successful integration of ICT (Information and Communication Technology). These programs aimed to provide teachers with fundamental ICT skills via level training and B-level training. A-level training equips instructors with fundamental knowledge and abilities in utilizing ICT for educational purposes, enabling them to effectively incorporate ICT in teaching and learning. On the other hand, B-level training comprises several sub-levels of ICT knowledge

and skills. These two programs guaranteed that instructors gained fundamental digital literacy skills that enable the incorporation of information and communication technology (ICT) in the instruction, learning, and management of secondary schools (Michalakis, Vaitis, & Klonari, 2017). As to the findings of Muriithi (2017), principals have a deficiency in their understanding of ICT in administration, which therefore hampers the widespread use of ICT in schools. A research done in Sudan on the integration of ICT in public secondary schools by Abdelwahed (2016) found that the lack of knowledge and skills among teaching staff hindered the successful application of ICT in administration, therefore creating hurdles to integration. The lack of ICT skills impedes principals' ability to incorporate ICT, as stated by Mbithe (2016). According to a research conducted by Nyanhoka in 2017, it was found that training plays a crucial role in enhancing the ICT expertise of principals in the field of administration. According to the research, the degree of ICT literacy among principals is crucial for the integration of ICT.

1.2 Statement of the Problem

The significance of ICT in secondary schools should be underscored owing to its numerous benefits, such as facilitating effortless work presentations, enabling quick access to information, and facilitating convenient monitoring and assessment, among other advantages. Given that school principals are responsible for student registration, student discipline, class attendance, curriculum administration, staff management, provision and management of physical facilities, and financial management. Without access to ICT resources, managing a large number of activities in schools can be a difficult undertaking. Although other nations have achieved up to 41% integration of

ICT in school management, administration, and learning, Kenya lags behind despite its significant investment in ICT (Republic of Kenya, 2013). Although ICT plays a crucial role in areas such as health, banking, transport, and communication, it is evident that the education sector in Kenya has not completely incorporated ICT, particularly in the management of public secondary schools. Kenya is experiencing a significant technical delay (Republic of Kenya, 2016). Despite the ICT strategy of 2006 for the management of secondary schools in Kenya, a significant amount of administrative work in public secondary schools is still done manually (Republic of Kenya, 2016). According to KESI (2018), the adoption of ICT for managing secondary schools has not been widely accepted. The education management industry requires training courses in ICT due to the constant evolution of ICT, which necessitates ongoing professional development (MOE, 2019). Based on the needs assessment study for the development of ICT in education and training in 2018, it was found that 52% of school principals were aware of the national ICT plan for education and training in 2006. However, only 17.3% of them really implemented the training. The research highlights many significant problems, including a scarcity of ICT infrastructure, insufficient or unstable internet access, inadequate ICT training, an unpredictable power supply, a bad perception towards ICT, and a high maintenance cost. The document titled "Policy on ICT in education and training, 2021" is being referred to.

According to the data of the adjacent counties of Vihiga, the integration of ICT in administration was successful, despite the problems that were mentioned. A research conducted by Otieno (2016) in Kisumu found that the

majority of secondary schools (60%) utilize ICT for administrative purposes. However, the main obstacles to the integration of ICT were identified as insufficient training (60%) and a scarcity of technical assistance (66.7%). Furthermore, the investigation uncovered that several public secondary schools employ ICT for administrative purposes, and the extent of main utilization of ICT in administration varies from proficient to moderate. A study conducted by Oluoch (2016) in Siaya county revealed that 90% of schools, regardless of gender, in the county had well-equipped departments with computers, printers, and photo printing machines. Additionally, the schools had fully equipped ICT facilities in their examination departments, which facilitated exam processing, school and exam timetable management, and analysis of student results. According to the report, 68% of the principals had acquired computers for their own usage. In Kakamega, the integration of ICT in school administration was successful. However, there were obstacles related to ICT integration, including a scarcity of technical assistance (61.9% of schools) and a lack of adequately qualified people (57.1% of schools) for ICT usage. As per the Vihiga county Education office (2015) report, of the 153 public secondary schools, only 37.2% of them included ICT in their administration. This proportion is relatively low when compared to the level of ICT integration and usage in the neighboring counties. Therefore, a survey is necessary to identify the factors that are impeding the integration of ICT in the administration of public secondary schools in Vihiga County.

1.3. Purpose of the Study

This study aimed to examine the factors that impact the incorporation of Information and Communication Technology (ICT) by principals in the management of public secondary schools in Vihiga County, Kenya.

1.4. Objectives of the Study

This study was set to investigate the following objectives:-

- i) To determine the extend of ICT use by school principals' in the administration of public secondary schools in Vihiga County.
- ii) To establish how the mobilization of ICT infrastructure influences school principals' integration of ICT in the administration of public secondary schools in Vihiga County.
- iii) To establish the influence of school principals' accessibility to ICT infrastructure in ICT integration in the administration of public secondary schools in Vihiga County.
- iv) To determine the influence of school principals' ICT literacy on theirintegration of ICT in administration public secondary schools in Vihiga County.

1.5. Research Questions

The objectives was guided by the following research questions;

- i) What is the extend of ICT use by school principals' in the administration of public secondary schools in Vihiga County?
- ii) To what extend domobilization of ICT infrastructure influence school principals' integration of ICT in the administration of public secondary schools in Vihiga County?

iii) What is the influence of school principals' accessibility to ICT infrastructure in integration of ICT on the administration of public secondary schools in Vihiga County?

iv) To what extent do school principals' ICT literacy influences the integration of ICT in public secondary school in Vihiga County?

1.6. Significance of the Study

The findings of the study would be of significance to teachers and school principals to learn the benefits of ICT integration in school administration and teaching and the results of the study might be used in the future to investigate school-based factors influencing ICT integration in public secondary schools in Vihiga and other counties in the republic of Kenya.

1.7. Limitations of the Study

Data collection involved the utilization of questionnaires, which were susceptible to bias. However, the researcher employed many questionnaires and respondents to triangulate, so enhancing the reliability and validity of the study tools. Certain participants lacked a comprehensive understanding of ICT. Hence, the administration of research equipment involved elucidating ICT ideas and terminology to them.

1.8. Delimitations of the Study

The study was limited to Vihiga County and exclusively conducted in public secondary schools. This study specifically focused on individuals holding positions of BOM chair, BOM secretaries, PA chair, QASOs, and heads of departments in public secondary schools. Consequently, it excluded other members of the board of management and parents.

1.9. Assumptions of the Study

The study participants were knowledgeable about the integration of ICT in school administration and provided truthful responses. The impact of ICT integration in school administration could be affected by different institutional factors, which could be assessed through the use of questionnaires. Principals exhibited a positive attitude towards ICT, and the level of ICT skills among school administrators could facilitate the adoption of ICT in the administration of public secondary schools. Additionally, all the chosen institutions for the study demonstrated cooperation.

1.10. Definitions of Significant Terms

Administration – is the management of various activities such as human resource management, financial management, school community relationship and facility management within the establishment of an education system.

Board of Management – is the board that governs an educational institution through setting strategies and overseeing school management such as supervision of teachers, supervision of curriculum and instruction implementation, infrastructural development etc.

Computer – is a device integrated in management of education that assists in student registration, financial management, human resource management, curriculum etc. in an educational institution.

ICT accessibility – refers to a situation whereby ICT tools such as internet, computers, laptops, printers, scanners, data projectors etc can be easily reached by the secondary school administration.

Information Communication Technology availability – refers to the aspect of ICT tools such as, computers, laptop, scanners, printers, data projectors etc. being ready for use for secondary school administration.

Information Communication Technology – implies technology and tools that process, share, source and distribute data e.g. computers, laptops, scanners, printers, data projectors etc.

Integration – is the incorporation of ICT tools such as, computers, laptop, scanners, printers, data projectors etc. to assist in the school administration.

Internet – is the interconnected system of networks that connect computers within an educational institution to access online data for teaching and learning purposes.

PA Chair- is an elected member by the parents of a particular education institution to promote interests of students in school by cooperating with the school board, principal, teachers and students.

Principal – is a teacher by profession employed by the teacher's service commission and entrusted to manage an education center.

Public secondary school – is an educational institution offering basic education under the custody of the government.

Quality Assurance and Support Officer- is a quality assurance and standards officer employed by the teachers' service commission or ministry of education to provide quality education by inspecting, advising, giving feedback and implementing school curriculum.

School administrators – refer to the principal, deputy principal and heads of departments who help in managing and coordinating of school activities.

1.11. Organization of the Study

The study was organized into five chapters. chapter one comprised of the background of the study, the purpose of the study, the objective of the study, research questions, the significance of the study, limitations and delimitations, assumptions, the definition of significant terms and the organization of the study. chapter two covered literature review that was comprised of the principals' use of ICT in the administration of public secondary schools, principals' mobilization of ICT infrastructure, principals' accessibility of ICT resources, the level of ICT skill among principals', theoretical and conceptual framework and summary of the literature.

Chapter three deals with research methodology and consists of research design, target population, sampling size and sampling procedure, research instruments, the validity of the research instruments, reliability of the research instruments, data collection procedures, data analysis techniques and ethical consideration. Chapter four dealt with data analysis, interpretation and findings while chapter five covered summary of the data findings, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter provided a comprehensive review of the literature pertaining to the study. The topics covered included the concept of integrating information and communication technology (ICT) in management, the utilization of ICT by principals, the mobilization and accessibility of ICT infrastructure by principals, the ICT literacy of principals, a summary of the literature, and the theoretical and conceptual frameworks.

2.2 The concept of integration of information communication and technology in management

ICT integration refers to the integration of ICT resources into the everyday activities, tasks, and management of a school (UN, 2019). The use of Information and Communication Technology (ICT) in administration has facilitated principals in effectively managing personnel by allocating tasks to instructors, collecting data, and overseeing overall school management (Tanui, 2016). This technological advancement has transformed the field of administration by facilitating the transfer, retrieval, storage, processing, and sharing of data (Enu, 2018). Consequently, it has enhanced the efficiency of school administration in financial planning, encompassing the allocation of budgets, management of expenditures, collection of students' fees, and school accounting (Wahome, 2017). Although ICT has improved administrative efficiency, the integration of ICT in school management is still lacking owing to a lack of technical expertise and limited access to ICT resources. These

factors have significantly hindered the process of integrating ICT into school administration. Therefore, it is necessary to gather ICT resources in order to achieve successful integration of ICT.

2.3. Principals use of ICT in the administration of Public Secondary

Schools.

Various research studies on school principals' status in ICT use and adoption in public secondary schools have held that many policymakers and scholars agree school principals play a significant role in the facilitation of the use of ICT in schools (Anyanful & Abdulai, 2018; Mbithe, 2016; Suffer & Kihara, 2019). The competence of a school principal in the use of ICT and knowledge of administrative, financial, technical, curricular and social dimensions of ICT in education is important to the effectiveness and sustainability of ICT integration programs. Principals' Use of ICT in the management of Public Secondary Schools has enhanced school planning, information distribution and administration including school-based assessment records, syllabus completion reports, timetabling, financial records and databases for learner's records, curricular activities, budgeting, infrastructure and human resources, Wahome (2017).

In Malaysia, a study by Abdul, Razak and Zohora (2017) to investigate the areas of ICT utilization among teachers and principals of Malaysian schools, a representative sample of 260 school principals, supervisors and teachers was used. The findings demonstrated that most principals used ICT that encouraged ICT integration in the administration of Malaysian schools. Also, according to the study, ICT expertise and skills were well integrated into teaching and

learning and in daily administrative purposes. Abdul et al (2017) study did not specify whether it was conducted in primary or secondary schools and only used a questionnaire for quantitative analysis. According to the study by Raby(2017) on ICT integration in public secondary schools in Uganda that used interviews and questionnaires majorly to collect quantitative data and involved a sample of 12 secondary schools,12 principals,3 educational officers,3 curriculum developers and 20 students, the study indicated that principals' use of ICT aided decision making, planning, organizing, coordinating and evaluation in public secondary schools in Uganda and that principals managing big schools find it tough to run school activities due to high population without the use of ICT in administration. The study recommended that for the principals to function effectively, ICT must be integrated into the management of schools.

Despite the Government of Kenya working to ensure that ICT use is realized in Kenya education institutions, ICT integration in Kenya has been a technical subject and not integrated into the management of schools. Principals' use of ICT in management is greatly underutilized (Chigona, 2020) hence hindering ICT integration in the management of public secondary schools. According to Mainai's (2016) study on head teachers' preparedness for the integration of ICT in the administration of primary schools in the Narok North sub-county, the study revealed that most teachers were not able to use ICT. According to the findings,63% of the teachers were not able to use the internet,65% were not able to use word processing,73% were not able to use emails and 77% databases. The same research indicated that computer use by head teachers in the administration of primary schools had a significant ($P<0.005$) effect on

ICT integration. Mainai (2016) study applied The technology Acceptance theory and was focused on primary schools while the current study will employ Activity Theory and will focus on public secondary schools.

2.4. Principals' Mobilization of ICT infrastructure for the integration of ICT in the administration of Public Secondary Schools.

The incorporation of social responsibility projects by principals in public secondary schools has helped the integration of ICT in school administration, with the support of government and organizations through contributions. The MasterCard Foundation report (2019) conducted qualitative research using interviews, focus groups, literature review, and observation to investigate the integration of ICT in secondary schools in sub-Saharan Africa. The findings revealed that despite an increase in average public expenditure on education as a percentage of GDP from 4.2% to 4.9% between 2000 and 2012 (UNECA, 2015), most low-income sub-Saharan African countries consider ICT for education as a luxury they cannot afford. The current ICT infrastructure mostly relies on contributions (Ott, Bloome & Trucano, 2018), while governments allocate minimal funds for technology in education (Motlotle, 2018). The insufficient information and communication technology (ICT) infrastructure, caused by a restricted budget allocation for digital integration in education, has impeded the integration of ICT by principals in public secondary schools. The case study of Cape Verde and South Africa reveals that in Cape Verde, the research suggests that the ministry of education and sports receives a specific allocation of cash from the national budget to finance ICT infrastructure. However, there is no budget provided for technology repair

or maintenance (Andrade, 2018). In South Africa, the national budget allocation provides funding for government ministries, including the department of basic education, while the province allocation finances the education departments at the provincial level. The allocation of funds for the integration of ICT is derived from the central national budget and is constrained. Consequently, schools face a scarcity of ICT resources (Mabena & Kikine, 2018). According to the study, the government of Mauritius has utilized ICT resources from budgetary allocations to guarantee that computer laboratories are provided in all public secondary schools. In 2017, the education budget allocated by the government of Mauritius accounted for 5.082% of the country's GDP, according to the World Bank (2020). Furthermore, 41% of this expenditure was specifically allocated to financing secondary schools. This has resulted in the incorporation of Information and Communication Technology (ICT) in education, accompanied by increased government receptiveness to public-private partnerships and government-to-government efforts.

The Kenyan government, via the Kenya ICT Trust Fund established in 2004, has collaborated with various public sector organizations, private sector organizations, donors, civil society, and professional and educational institutions to mobilize and provide ICT resources to public secondary schools and learning centers. The primary goal is to mobilize resources to address the issue of ICT deficiencies in schools, create an ICT portal to facilitate data exchange, and establish a national computer assembly center. The resources, such as computers, computer laboratories, and computer experts, have been mobilized by principals and allocated to different public secondary schools.

These resources are intended to facilitate the integration of ICT in the administration of educational institutions. They have been sourced from various government ministries and received as donations from partner organizations. The government's elimination of duty on ICT equipment has facilitated the implementation of many technologies in schools, including mobile phones, Nepad e-school programs, PCs for schools, and internet connectivity. This has facilitated the accessibility of ICT infrastructure for the management of public secondary schools by school principals through their cost-effective acquisition. Oluoch (2016) conducted a research on measures to improve the use of ICT in delivering management services in public secondary schools in Siaya County. The study employed a descriptive survey approach and primarily gathered data through interviews and questionnaires. It was determined that 84% of the principals utilized non-governmental organizations (NGOs) to provide computers. Additionally, all principals (100%) stated that they are currently in discussions with the Parent-Teacher Association (PTA) to authorize the use of PTA funds for the acquisition of more computers for school management. Furthermore, all principals (100%) agreed that their schools intend to utilize parental contributions to procure information and communication technology (ICT) facilities for the administration of public secondary schools. The study employed purposive sampling to select 43 educational institutions that have integrated ICT in their management. In contrast, the current study will use simple random sampling to select 65 schools in Vihiga County. The purpose of this selection is to investigate the individual factors of principals that influence the integration of ICT in the administration of public secondary schools.

2.5. Principals' accessibility of ICT Resources for the integration of ICT in the administration of Public Secondary Schools.

The presence of ICT infrastructure in schools significantly influences its incorporation into the management of public secondary schools. Regrettably, a limited number of nations have a meager proportion of schools including ICT in their administration (UN, 2019). Developing countries are in the early stages of integrating ICT and have not seen significant improvements in management due to limited access to ICT infrastructure, unlike the European Union, which has effectively utilized ICT in managing educational institutions. The utilization of ICT in the management of education in European Union activities has been enhanced, however in poor nations, the integration of ICT still lags behind.

In Akhtar's (2008) research on ICT accessibility in the northwestern province of Pakistan, a sample of 6000 public secondary school teachers revealed that the majority had challenges in integrating ICT into their teaching practices. This was mostly due to a lack of ICT access, since many schools in the region did not have the necessary equipment. The survey also revealed that although some school principals and instructors had access to ICT, they did not use it into their administration and teaching practices. While several schools possess ICT infrastructure, only a small number are effectively utilizing it for administrative purposes, as stated by KICD (2018). The study suggested the necessity of providing ICT access in the administration of public secondary schools and its application in management. A study conducted by Nwana, Ofoegbu, and Egbe (2017) in Nigeria examined the accessibility and usage of information and communication technology (ICT) in public secondary schools

in Anambra state. The findings revealed a severe lack of ICT infrastructure, and even in schools where resources were available but limited, teachers demonstrated poor utilization of these resources. As per the 2003 report from the computer literacy project of Kenya. A total of 6000 computers are required for the 20000 schools in Kenya. A significant scarcity of ICT infrastructure hindered the integration of ICT in several schools. In order to enhance the availability of ICT, the Government of Kenya implemented a rural electrification program aimed at supplying power to schools located in rural regions. This initiative has resulted in a reduction in the expenses associated with obtaining ICT equipment, as well as the provision of specialized computers to cater to the needs of learners with unique requirements (Republic of Kenya, 2005). Kavinya's (2021) study on the impact of ICT infrastructure availability on ICT integration in public primary schools in the Kitui central sub-county found that a significant number of public primary schools in Kitui central constituency lacked ICT infrastructure. Specifically, only 43.3% of the schools had desktop computers, 27.8% had interactive whiteboards, and 31.1% had overhead projectors. 44.4% of principals reported having access to laptops, with 27.8% of them reporting bad internet connectivity.

The study conducted by Nwana et al (2017) did not provide information on the specific impact of accessibility to ICT resources on the integration of ICT in administration. In contrast, this study aims to determine the precise influence of principals' accessibility on the integration of ICT in public secondary schools. Kavinya's (2021) research was carried out in public elementary schools, but the present study would be undertaken in public secondary schools.

2.6. ICT Skills level among principals' in the integration of ICT in public secondary schools

ICT skills refer to the capacity to recognize and utilize computer hardware and software in order to accomplish a certain objective. Omotayo (2015). Suleiman (2018) defined ICT competence as the proficiency in utilizing digital technology and networks to access and communicate through various tools, as well as the capacity to integrate, manage, produce, and analyze information. CT skills refer to the capacity to confidently and efficiently handle the use of computer technology across all degrees of computer proficiency, encompassing awareness, literacy, application, and invention. Teachers should aim to have a high degree of proficiency in using computers for practical purposes (Siddiqui, 2017). Enu (2018) states that a significant number of instructors in public secondary schools lack sufficient ICT skills, resulting in their limited capacity to use technology into teaching and learning activities. The poor knowledge and abilities of teachers are identified as the main reasons for the low adoption of ICT by teachers (Muriithi, 2017). This further demonstrates that a significant number of school administrators lack the necessary proficiency in ICT to successfully incorporate it into their management practices.

A research conducted in Indonesia by Nurhabibah, Miraj, and Yannuar (2018) found that high school teachers had a lack of confidence in utilizing ICT. Additionally, the study demonstrated that instructors exhibit varying degrees of ICT literacy based on their age and educational background. Instructors aged 21 to 40 had higher levels of competency in ICT literacy compared to instructors over the age of 40. Alazam, Hamzar, and Asmiran (2012)

conducted a research in Malaysia on ICT literacy. The findings revealed that teachers in Malaysia utilize ICT for teaching, learning, and administrative purposes. However, the study also indicated that teachers' ICT abilities are only of a moderate level. In their study on ICT literacy in basic schools in Ghana, Enu et al (2018) discovered that the majority of instructors have a moderate level of ICT abilities. Teachers predominantly utilize ICT for interpersonal communication and socializing with colleagues and acquaintances using platforms such as Facebook, Instagram, and WhatsApp. The teachers' limited incorporation of ICT in teaching, learning, and administration is mostly attributable to a deficiency in ICT skills and infrastructure, resulting in inadequate integration of ICT in the management of public secondary schools.

One of the strategic goals for developing ICT capacity in Kenya's education sector is to guarantee that all individuals involved in education, including principals and other stakeholders, has ICT skills. This is necessary to effectively incorporate ICT into the teaching, learning, and management of public secondary schools. Mbithe's (2016) study examined the factors that affect the use of ICT in teaching and learning in public secondary schools in the Machakos sub-county. The study found that most principals had only basic ICT skills, which hindered the effective use of ICT in school administration. Additionally, there was a high ratio of computers to students, and a weak positive correlation between principals' ICT proficiency and the integration of ICT in school administration in Machakos.

In their study, Nurhabibah et al (2018) employed a descriptive desktop methodology, primarily relying on literature review and document analysis to

gather secondary data from research journals and research report books. The present study will primarily utilize primary data, with the collection of firsthand knowledge accomplished through the use of interview schedules and questionnaires. The study conducted by Alazam et al (2012) mostly examined vocational and technical institutions, whereas the present study will primarily concentrate on public secondary schools. The study conducted by Enu et al (2018) employed a qualitative analytical research style, specifically targeting primary school teachers. In contrast, the present study will utilize a descriptive strategy and primarily concentrate on instructors in public secondary schools. The study conducted by Mbithe (2016) primarily utilized questionnaires as the main method for data gathering. In contrast, the current study will employ a combination of questionnaires, interviews, and document analysis to enhance the data collecting process.

2.7. Summary of the Literature

Based on the literature analysis, it is evident that principals lack the necessary skills and knowledge to effectively incorporate ICT into the administration of public secondary schools. The sources used include Mbithe (2016), Nurhabibah et al (2018), Alazam et al (2012), Enu et al (2018), and Mainai (2016). Enu et al. (2018) found that principals continue to have limited usage and literacy in ICT. Presently, there is a limited use of ICT integration in the management of public secondary schools. However, research conducted by Abdul, Razak, and Zohora (2017) and the Mastercard Foundation Report on Malawi (2019) have shown that several schools had ample ICT resources and a significant number of instructors possess the necessary ICT skills for incorporating ICT into teaching, learning, and administrative tasks. Hence, it

is important to identify the discrepancies in the research and identify potential suggestions to tackle the elements that affect the incorporation of ICT by principals in the management of public secondary schools in Vihiga County, Kenya.

2.8. Theoretical Framework

This study will subscribe to activity theory(Kuuth,1996). Activity theory uses whole work activity as a unit of analysis that involves breaking activity into analytical components of subject, object and tool. Hassan(1998) opined that the Subject is the person being studied, the object is the intended activity and the tool is the mediating device by which the action is executed. Engstrom's(2001) study, provides additional two analyses of whole work activity that include rules and division of labour. He stated that rules are a set of conditions evaluating how and why individuals may act and are a result of social conditions while the division of labour is the distribution of actions and operations among communities of workers. These two elements affect the community and through this, groups of activities and teams of workers are anchored and can be analyzed(Hyland,1998; Verenikina,2001).

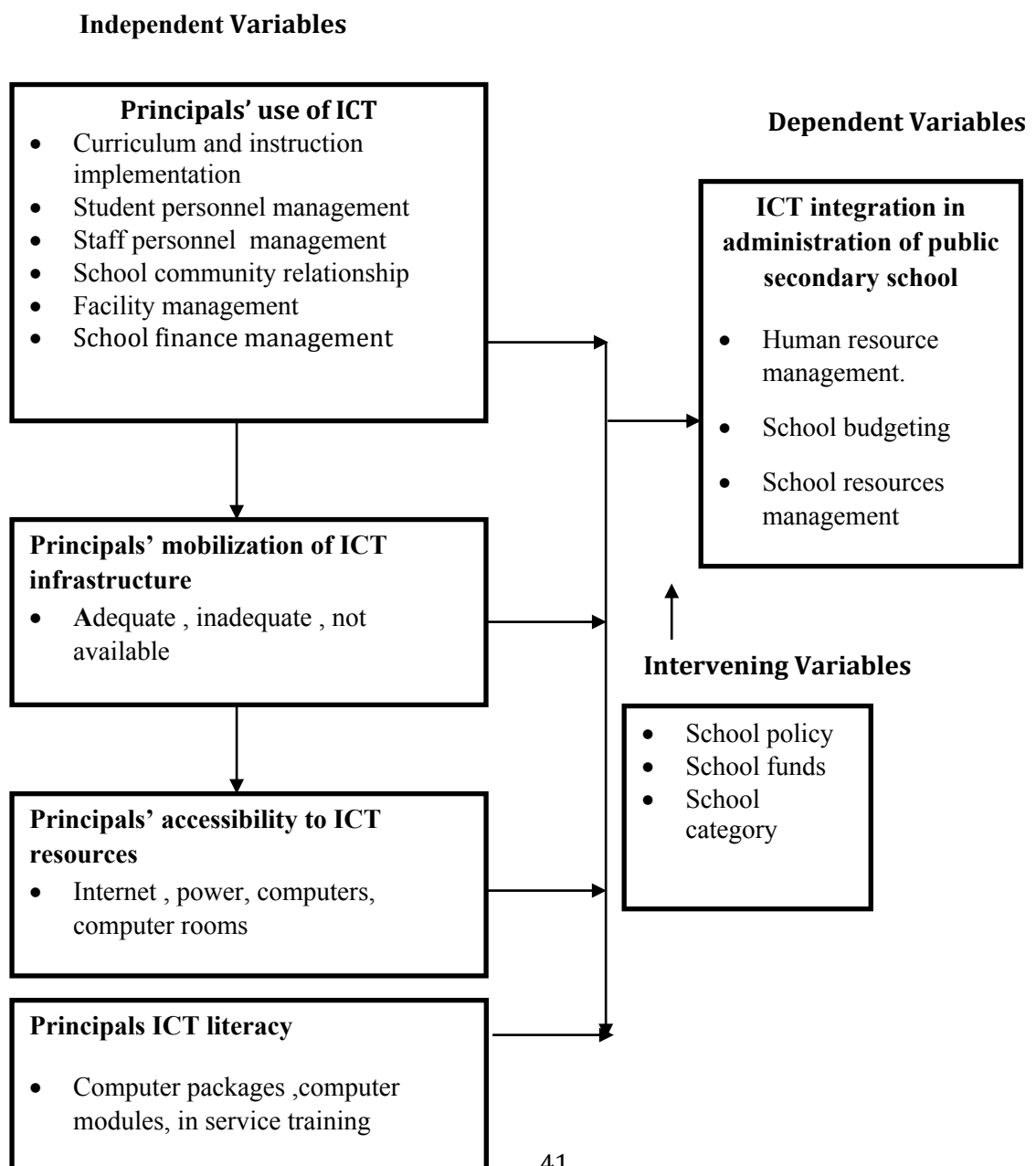
Activity theory involves the integration of technology as tools i.e. instruments, language, signs, computers and machines that mediate social action. It insists that activity is mediated by tools that help to explain the relationships between the user and the tool. The relations between individuals and their environment are considered through the component of the community. The relationship between subject and community is mediated by rules and the relationship

between object and community is mediated by the division of labour (Hettin,1998). The use of activity theory is vital in understanding user group activities in their development of information systems and multi-faceted analysis of information and its users and the dynamics between them(Hakkinen and Korpela,2006). This theory will be used to focus on the interaction of school administrators' activities and their consciousness within the secondary school context. It was adopted for this study because it provides a clear view of the interaction that takes place between school principals, deputy principals and heads of departments as far as ICT integration in secondary school administration is concerned. The secondary school context is an entire activity system that integrates the school principal, deputy principal and heads of departments with ICT tools and resources as well as the school community. The contradictions that occur in the activity system help to understand the breakdown in the relationship. Analysis of contradictions reveals why ICT integration in school administration is not achieved thereby transforming the activity theory to ensure successful ICT integration in the administration of the public secondary school.

2.9. Conceptual Framework

Conceptual framework is a model in which a researcher shows the relationship between variables in the study by using a diagram (Orodho, 2005).Figure 2.1 presents an interplay between the independent variables and the dependent variable.

Figure 2. 1: Conceptual Framework



The study proposes that by utilizing ICT in the execution of administrative tasks in public secondary schools, principals can effectively mobilize and access ICT resources, while also possessing ICT literacy. This, in turn, will lead to the attainment of efficiency in the integration of ICT in the administration of public secondary schools in Vihiga County, Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

Research design, study area, target population, sample size and methodologies, research instruments, validity and reliability of the instruments, data collection procedures, ethical issues, and data processing techniques were among the subheadings in this section that examined research methodology.

3.2. Research Design

Because the goal of the study was to describe the observed occurrence using both qualitative and quantitative methodologies, a descriptive survey design was chosen. According to Mugenda (2012), a descriptive survey is helpful when attempting to provide a thorough and accurate description of educational practice; for this reason, the design was thought to be the most suitable study technique. Given the findings of this study, the descriptive survey was deemed suitable as a self-report tool since it necessitates gathering quantitative data from a sample, which guarantees an accurate portrayal of the attitudes, ICT

proficiency, and availability and accessibility of ICT information structure among secondary school principals. Furthermore, a descriptive survey research design, according to Kothari (2012), makes use of a large sample and aids in describing the characteristics of a large population, making the results statistically significant even when analyzing multiple variables. Many questions can be asked about a particular topic, providing the desired flexibility of the analysis. Additionally, this research design was appropriate for the study since it employed questionnaires and interviews to gather information about people's attitudes, beliefs, feelings, and behavior regarding ICT integration in Vihiga County's public secondary schools. It also accurately and methodically described the behavior of a specific equation.

3.3. Target Population

Orodho (2010) states that a targeted population is made up of all the objects or individuals being studied in any given field of study. The study focused on 576 Heads of Departments, 5 QASOs, 160 BOM chairs, 160 BOM secretaries, 160 PA chairs, and 160 schools in Vihiga County (Vihiga county education office, 2020).

3.4. Sample size and Sampling Procedure

Table 3.1: Sample size distribution

Study population	Target population	Sampling method	Sampl e size	%	Data collection instruments
BoM Chairs	160	Simple random	40	25.0	Interview schedule
BoM secretaries	160	Simple random	40	25.0	Interview schedule

PA chairs	160	Simple random	40	25.0	Interview schedule
HODS	450	purposive	135	30.0	Questionnaires
QASOs	5	purposive	5	100	Interview schedule
Total	950		260		

Simple random sampling was used in the study to choose the public secondary schools' BOM Chairs, BOM Secretaries, PA Chairs, department heads, and QASOs who took part. Simple random sampling is the best method, according to Kothari (2013), because it is less biased. Additionally, Mugenda and Mugenda (2013) offer a sample ground. According to their opinion, a research study's sample size should represent at least 10% of the overall population in order to provide adequate representation in the descriptive study. For this reason, the researcher used 25% of the BOM chairs, BOM secretaries, and PA chairs, and 30% of the heads of departments in the sample. One QASO was chosen at random from each of the five sub counties using purposeful sampling. The study focused on 160 schools in Vihiga County. The names of all the schools from each of the sub-counties were folded and placed in a box. The folded papers were then mixed and selected for each sub-county, with eight schools chosen overall. As a result, the names of the principals, heads of departments, BOM chairs, and PA chairs whose schools were selected and included as study respondents were listed. Principals and department heads from the selected schools were picked for the study using a straightforward random selection procedure, which ensures that each participant has an equal and independent probability of being included in the sample. Stratified

sampling was employed to guarantee that the study's sampled schools covered all categories, as Vihiga County has national, extra-county, county, and sub-county schools.

3.5. Research Instruments

The information on ICT use and adoption in public secondary schools in Vihiga County was gathered through the use of the research instruments mentioned above, which included questionnaires sent to department heads, interview guides given to BOM chairs, BOM secretaries, PA chairs, and QASOs, and document analysis guides used to gather pertinent data.

3.5.1. Questionnaires for Heads of Department

Since questionnaires produce data suitable for statistical analysis, they were taken into consideration for this research study (Creswell, 2009). Additionally, the questionnaire was selected because to its speedy data collection, reduced time commitment, ability to cover the full sample in the allotted period, and increased certainty of animosity (Orodho, 2009). The questions were designed with the study's objectives in mind. Therefore, it was determined that data on department heads' ICT usage, ICT resource mobilization, ICT accessibility, and ICT literacy level should be gathered for the study.

3.5.2. Interview schedule For BOM Chair, BOM Secretary, PA Chairs and QASOs

According to Cohen and Morrison (2006), an open-ended interview format allows the researcher to ask the respondents questions, which makes the interview more conversational. For this reason, the interview schedule was chosen for the study. According to Keplinger (2003), a lot of people prefer

speaking to writing, therefore they are more prepared to share information during an interview. For this reason, the researcher used this tool to collect data from BOM Chairs, BOM Secretaries, PA chairs, and QASOs.

3.5.3. Observation

Gall, Ball, and Gall (2007) define observation as the process of gathering data directly from our senses regarding the characteristics of the physical and social world as it presents itself to us, as opposed to indirectly through the testimonies of others. Since observational data is obtained directly from real-world circumstances, it is appealing (Cohen & Marrion, 2006). They went on to suggest that observation is crucial for confirming people's accounts of themselves and their circumstances. According to Gall, Borg, and Gall (2007), the researcher should be able to access personal knowledge, perceive things that might not be considered otherwise, be open-minded and inductive, and uncover topics that respondent interview subjects might not discuss freely about. Consequently, it was determined that this instrument was appropriate for the research on the use of ICT in public secondary school administration.

3.5.4. Document Analysis Guide

This method makes it possible to analyze data that has already been documented. According to Creswell (2009), records can be regularly accessed and inspire a line of research. According to Mugenda and Mugenda (2009), methodological triangulation is a strategy that helps validate data by cueing verification of information obtained through questionnaires, interview guides, and observation schedules should be used by the researcher in conjunction with document analysis. With the use of a document analysis guide, it was possible to examine financial allocations, grants, and gifts for ICT-related facilities

such as working computers, printers, the Internet, and other associated equipment. By verifying the school budgetary allotment for ICT in the school ledgers account over time, the document analysis also made it easier to identify how the BOM Chair, BOM secretaries, PA Chairs, and QASOs have been mobilizing ICT resources.

3.6. Validity of Research Instruments

According to Gall and Borg (2013), validity is the extent to which a research instrument's findings are reflective of the phenomena under investigation and the precision with which the instrument measures the things it is supposed to measure. Kothari (2004) states that in order to guarantee the validity of the research instruments, the investigators made sure the instruments had sufficient coverage and scope for the issues under investigation, that the research questions covered all aspects of the conceptual framework, that the research questions were trustworthy and devoid of bias, and that the research instruments were pretested and supervisor-reviewed. To validate the content index validity (C.I.V) of the instrument, the following formula will be applied.

The two supervisors evaluated the instruments by going over them and determining how well the items reflect their intended purpose in order to determine the C.I.V. After that, they calculated the average by comparing the invalid and valid entries. The instrument was to be recognized as legitimate if the average index was to be higher than 0.7. (Amin, 2005)

3.7. Reliability of Research instruments

The ability of a research instrument to produce consistent results when given to respondents repeatedly is known as its dependability (Orodho, 2013). The researcher will work with the supervisors to construct the research instruments so they may provide guidance in order to make sure the questionnaire was reliable.

Five public secondary schools in Vihiga County participated in a pilot project, even though those schools were not included in the study. The accuracy of the data to be collected greatly depends on the reliability of the study instruments, according to Mugenda and Mugenda (2013), so the results of the pilot study were subjected to Pearson's product correlation coefficient to assess the consistency therein and make necessary adjustments before the final administration. Therefore, we shall utilize the Pearson product moment correlation coefficient formula (r).

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 $\sum y$

According to Kothari (2013), a research tool that has a correlation coefficient between 0.7 and 1.0 is sufficient and appropriate. The instrument was to be regarded as dependable and, as a result, used for the research if this criteria was met.

3.8. Data Collection Procedures

The University of Nairobi and the National Commission for Science, Technology, and Innovation (NACOSTI), where the research permit was acquired, were consulted for permission to perform the study. The county commissioner, the county director of education, the deputy county director of the teachers service commission, and the principals of the public secondary schools to be sampled in Vihiga County were given copies of the permit for Vihiga County, which was obtained from the county director of education of Vihiga County.

3.9. Data analysis Techniques

Qualitative data was subjected to content analysis. The process involved classifying and indexing the replies and other field notes into common themes that align with the objectives. The quantitative data was examined using computer tools, specifically SPSS. Data analysis and presentation involved the systematic organization and examination of collected data from the field. This was done by typing and editing, as well as tabulating and interpreting the data in accordance with the study's objectives, resulting in a full report. The data analysis was conducted in collaboration with a statistician. The qualitative data obtained from the open-ended questions in the questionnaire was manually coded using a coding frame and analyzed using the principles and procedures of a thematic approach.

The data was displayed utilizing percentages, tables, and bar graphs, which were examined in accordance with the goals. Pearson product moment

correlation was employed to ascertain the degree to which independent variables exert effect on the dependent variable.

3.10. Ethical Considerations

Gardiner (2011) asserts that researchers must adhere to ethical principles of treating study participants equitably, empathetically, and with utmost dignity. Multiple procedures were used to guarantee that the rights of all participants in this study are safeguarded and not infringed upon. The researcher duly recognized all sources of information utilized in the development of this work. Prior to conducting data collection in the field, the researcher acquired the necessary research license and authorization letter from the National Commission for Science and Technology and Innovation (NACOSTI) to assure compliance with Kenyan legislation. In order to instill trust in the respondents, the researcher provided them with an assurance of unanimity and confidential treatment of all the material shared throughout the discussion. If relevant, the researcher was required to carefully choose in order to prevent any unjustifiable exclusion or unfair treatment.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION OF THE FINDINGS

4.1 Introduction

The main aim of this research was to examine the factors that affect the incorporation of ICT in the management of public secondary schools in Vihiga County, Kenya. In order to achieve the main goal of the study, the research concentrated on four specific objectives. These objectives were: to ascertain the utilization of ICT by school principals in the management of public secondary schools, to examine the impact of school principals' mobilization of ICT infrastructure on their integration of ICT, to establish the influence of school principals' access to ICT infrastructure on their integration of ICT in administration, and to determine the effect of school principals' ICT literacy on their integration of ICT in the administration of public secondary schools in Vihiga County, Kenya.

4.2 General and demographic information

4.2.1 Survey Return Rate

The study was carried out with a majority of 92.7% of the participants. Out of the 260 participants in the study, 241 individuals (consisting of 38 Board of Management chairs, 37 Board of Management secretaries, 37 PA chairs, 125 Heads Of Departments, and 4 Quality Assurance and Standard Officers) completed the study's questionnaire. Mugenda & Mugenda (1999) contend that a response rate of 50% is seen satisfactory for analysis, while a response rate of 70% is considered exceptional for conducting a study's analysis. The

response rate of 92.7% from the participants was adequate for conducting the analysis, interpretations, and drawing acceptable conclusions of the study.

4.2.2 Demographic Characteristics of the Participants

This section provides an overview of the participants' demographic profile, including their gender, age, and years of teaching experience. The data is visually represented using graphs and charts, displaying the information in the form of percentages.

Gender of the respondents

The purpose of this study is to highlight the disparity in the proportions of male and female teachers in public secondary schools in Vihiga County, Kenya, by considering the gender of the respondents. Figure 4.1 displays the distribution of respondents by gender.

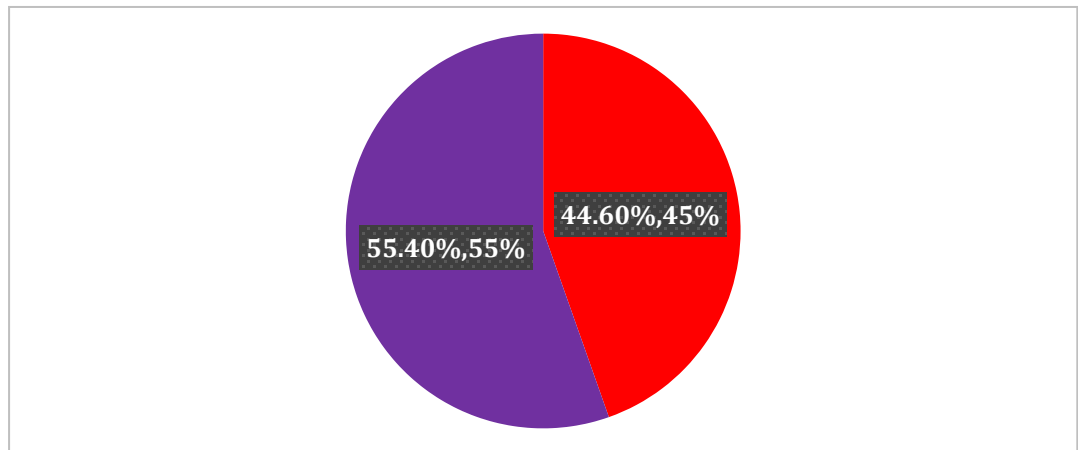


Figure 4. 1: Gender of the participants

The findings reveal that 55.4% of the participants were of the female gender, whilst male professors accounted for 44.6%. The study's findings would encompass the viewpoints of both males and females, offering useful insights into the elements that influence the incorporation of ICT in the management of public secondary schools in this particular setting.

Age Distribution

Age is a crucial demographic factor that reflects a teacher's level of maturity and experience in the classroom. It provides a wealth of information on the requirements for enhancing administrative standards in the education sector.

Figure 4.2 displays the demographic breakdown of instructors by age.

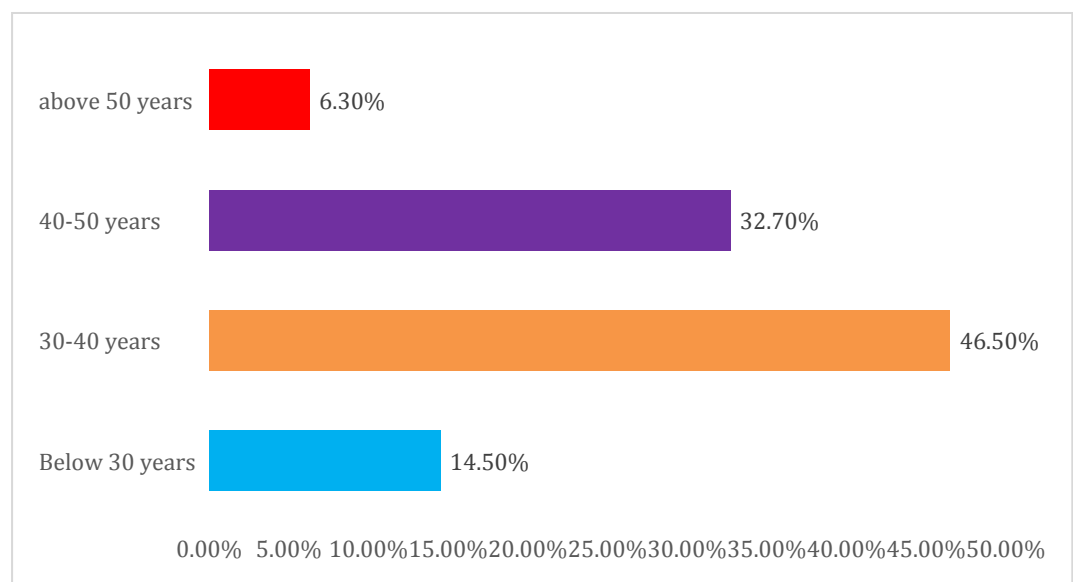


Figure 4. 2: Age of the participants

The results revealed that 46.5% of the participants were between the age range of 30-40 years, indicating a majority. Only a minuscule proportion of the respondents, specifically 6.3%, were aged above 50. This indicates that the majority of the participants had a substantial number of years, suggesting that a considerable portion of them are sufficiently mature to provide pertinent information in accordance with the study's aims.

Education Level of the Participants

To get a comprehensive understanding of the issues that impact the incorporation of ICT in the management of public secondary schools. The

researcher prioritized obtaining information on the respondents' professional credentials. The findings obtained are shown in Figure 4.3.

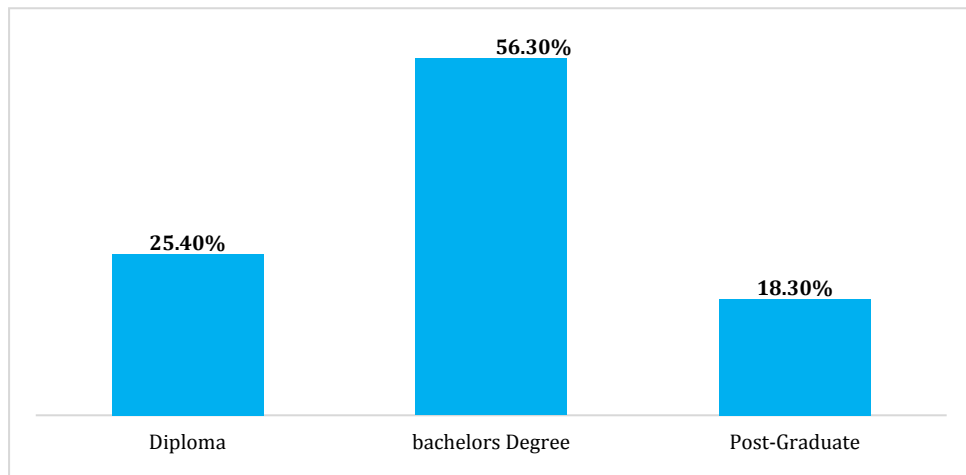


Figure 4. 3: Education level of the participants

According to Figure 4.3, the majority of individuals, specifically 56.3%, possessed a bachelor's degree level of education. Additionally, 25.4% held a diploma, while 18.3% had obtained a master's degree. The study's findings indicated that instructors had diverse professional credentials that contribute to obtaining a comprehensive report on the elements that influence the integration of ICT in school administration.

Work Experience

In order to comprehend the aspects that affect the incorporation of ICT in the management of public secondary schools. The researcher aimed to determine the level of teaching experience possessed by the respondents. Figure 4.4 displays the acquired response.

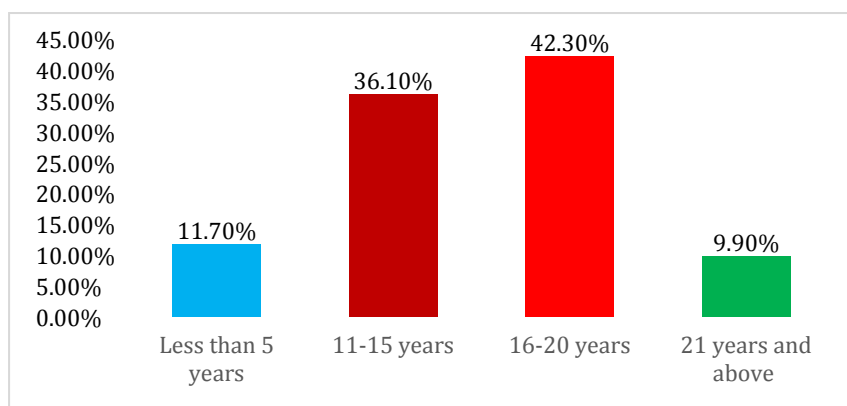


Figure 4. 4: Work Experience of the participants

The collected data indicates that the majority of instructors, specifically 42.3%, had a tenure of 16 to 20 years, while 36.1% had a tenure of 11 to 15 years. The statistics indicate that the majority of the teachers had a few years of teaching experience. It suggests that the instructors possess a comprehensive comprehension of the issues that impact the incorporation of ICT in the management of public secondary schools. Consequently, the responders were able to furnish dependable information.

4.3 Use of ICT and ICT Integration in the School Administration

The researcher aimed to determine the impact of participants' utilization of ICT on the integration of ICT in school administration duties. In the study, a Likert scale was employed to assess participants' viewpoint and their degree of agreement or disagreement with a series of questions and statements. The study findings are presented in figures 4.5, 4.6, and tables 4.1 and 4.2 below.

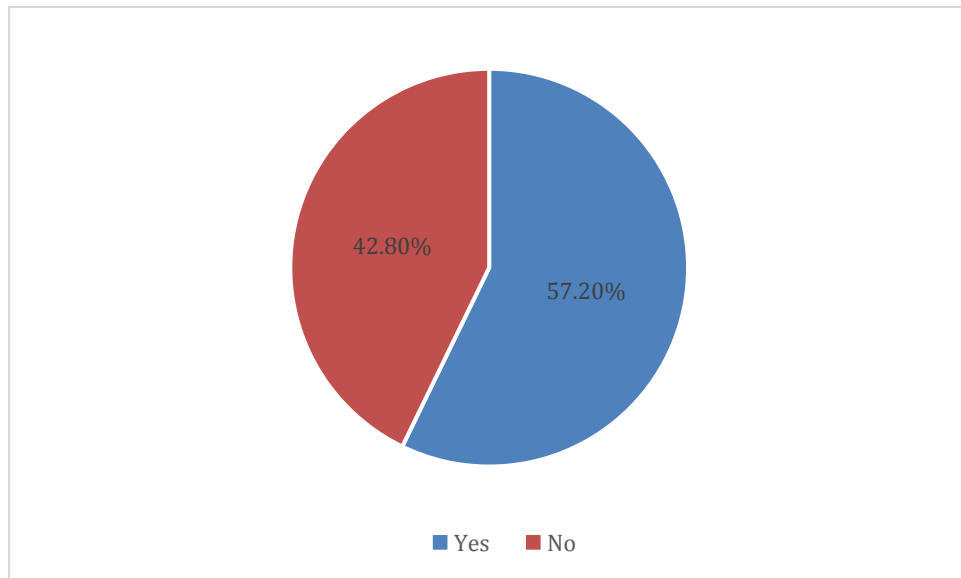


Figure 4. 5: Use of computer in administration of the daily work

Based on the survey findings presented in figure 4.5, over 57.2% of participants said that they utilize computers for their everyday job, whilst 42.8% do not employ computers. This suggests that some department heads have neglected to utilize computers while performing their responsibilities at educational institutions.

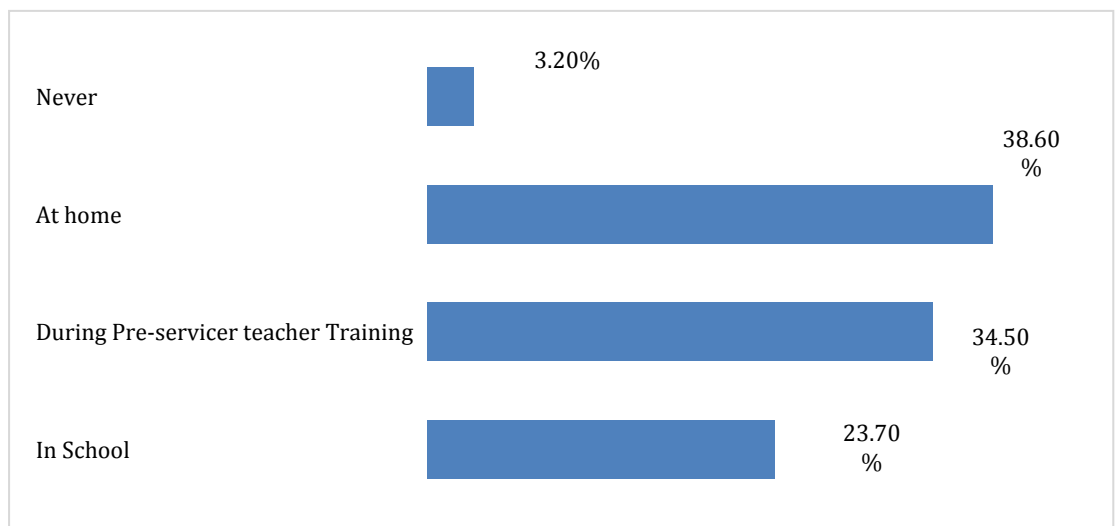


Figure 4. 6: First time to use Computer

Based on the findings presented in figure 4.6, it was observed that 23.70% of the Heads of Departments (HODs) who participated in the survey reported

using a computer for the first time during their time in school. Additionally, 34.50% of the HODs reported using a computer for the first time during their pre-service teacher training. at addition, 38.60% of the participants initially utilized a computer at their own residence, whereas 3.20% had no prior experience with computers. Consequently, it might be inferred that some professors lack proficiency in computer usage.

Table 4. 1: Perception of the use of ICT in school administration

Statement	V-often		Often		rarely		Never		Mean	SD
	N	%	N	%	N	%	N	%		
Curriculum and instruction implementation	6	16.4	16	42.1	9	25.0	5	13.2	2.48	1.29
Student management	10	27.6	9	26.1	10	26.6	5	13.2	2.59	1.73
Staff management	20	54.6	10	25.7	4	11.2	2	6.6	2.92	1.53
Financial management	11	31.4	10	26.6	10	25.7	4	9.9	2.73	2.04
Community relationship	7	19.7	14	38.2	12	32.2	2	5.9	3.0.	2.5
Grand									2.39	0.244

Table 4.1 displays the respondents' assessment of the utilization of ICT in school administration. Regarding the implementation of curriculum and teaching, 6(16.4%) of respondents indicated that ICT is used frequently, 16(42.1%) claimed that it is used regularly, and 9(25.0%) answered that it is used infrequently. The average impression score for this facet is 2.48, with a standard deviation of 1.29. Regarding student management, 10(27.6%) of the

respondents indicated that ICT is utilized frequently, while 9(26.1%) reported its frequent usage. Additionally, 10(26.6%) of the respondents noted that ICT is seldom employed. The average perception score for this facet is 2.59, with a standard deviation of 1.73. Regarding staff management, a majority of respondents 20(54.6%) reported that ICT is utilized often, while a smaller proportion 10(25.7%) indicated that it is used on a regular basis. A minority 4(11.2%) answered that ICT is rarely employed. The average perception score for this element is 2.92, with a measure of how far the scores vary from the average being 1.53. Regarding financial management, 11 (31.4%) respondents reported frequent usage of ICT, while 10 (26.6%) indicated regular usage and 10 (25.7%) mentioned infrequent usage. The average perception score for this facet is 2.73, with a standard deviation of 2.04. Regarding community relationships, 7(19.7%) of respondents indicated that ICT is utilized frequently, 14(38.2%) reported it is used regularly, and 12(32.2%) answered that it is used infrequently. The average perception score for this element is 3.03, with a measure of how far the scores vary from the average being 2.52. The study results were consistent with those of Wahome (2017), who suggested that ICT is a valuable resource that may enhance communication among school administrators, instructors, students, and parents. Platforms such as emails, messaging applications, or school websites may be utilized to disseminate updates, exchange information, and resolve problems, therefore providing seamless connectivity and comprehensive awareness for all those involved.

Table 4. 2: Use of ICT in School Administration

Statement	SA		A		N		D		SD		Mean	STD
	N	%	N	%	N	%	N	%	N	%		
I like learning how to use computer	24	10.5	31	25.0	42	33.6	16	11.1	11	8.6	3.36	2.018
I enjoy using computer	33	13.2	27	21.7	43	34.3	15	12.5	7	5.3	3.92	1.906
Computers ensure efficiency in administration	27	15.8	30	24.3	41	32.9	21	17.1	5	3.9	3.09	1.856
Computers are important administrative tools	23	15.8	31	25.0	45	35.6	21	16.4	6	4.6	3.22	1.721
I manage information more efficiently using ICT	17	18.4	32	25.7	35	36.2	21	17.1	9	7.2	3.36	1.801
I manage human resource more efficiently using ICT	23	13.8	30	24.4	35	27.6	24	19.1	13	10.5	3.05	1.778
ICT has enabled curriculum and instruction implementation	20	18.4	30	24.3	45	36.2	22	17.8	7	5.9	3.32	1.363
I find computer use time consuming	19	21.7	32	25.7	36	29.0	26	21.1	11	8.6	3.19	1.375
It's difficult for me to use a computer	17	26.3	31	25.0	42	33.6	24	19.1	11	8.6	3.36	2.018
I feel lost in the information age	13	21.2	49	39.5	45	36.2	14	11.2	3	2.6	3.48	1.531
Grand mean											3.28	1.681

According to Table 4.2, most of the Heads of Departments who took part in the survey expressed a desire to gain computer skills. Specifically, 24 individuals (10.5%) highly agreed, while 31 individuals (25%) agreed. Conversely, 60 individuals, accounting for 48% of the total, expressed their enjoyment in utilizing computers. Moreover, a majority of 57(46%) respondents expressed that the utilization of computers guarantees enhanced efficiency in administrative tasks. Furthermore, 54(43.4%) participants expressed the significance of computers as essential administrative tools,

while 47(39.5%) participants stated that they are able to handle information more effectively via the use of ICT. Additionally, 53(42.8%) participants reported that they are able to manage human resources more efficiently with the use of ICT. However, 50(40.1%) individuals stated that ICT has facilitated the implementation of curriculum and instruction. However, 51 (41.5%) individuals expressed that they perceive computer use as time-consuming, 48 (38.2%) individuals find computer usage challenging, and 62 (60%) individuals feel overwhelmed by the abundance of information in the digital era. The overall grand mean for all statements combined was 3.28, which suggests a moderate level of ICT use in school administration. The presence of a standard deviation of 1.681 indicates the existence of variability in the replies. The results of this study align with Raby's (2017) findings on the integration of ICT in public secondary schools in Uganda. Raby's study demonstrated that the use of ICT by principals facilitated decision making, planning, organizing, coordinating, and evaluating in these schools. Additionally, the study revealed that principals who oversee large schools face challenges in managing school activities effectively due to the high population, unless ICT is utilized in administration.

4.4.1 Thematic Analysis of Qualitative on the Use of ICT and ICT

Integration in the School Administration.

The researcher further aimed to get insights by collecting qualitative data on the impact of ICT usage on the incorporation of ICT in the administration of public secondary schools.

The majority of the Board of Members' chairpersons have acknowledged that they are making significant efforts to ensure that schools have adopted advanced technology. However, the lack of adequate resources, training, and awareness of the importance of ICT in education has hindered the complete integration of ICT into daily school administration. According to several members of the school Board of Management (BOM), they have supplied instructors with information and communication technology (ICT) tools and resources. These include computers, internet connection, and software for managing student and staff records, student attendance, and grades. At the community level, the majority of individuals have advocated for the utilization of ICT tools and platforms to engage with parents, guardians, and other stakeholders. This is typically done through websites, emails, or social media. However, the primary obstacle identified by most participants from the Board of Management (BOM) is the insufficient availability of computers, internet access, and software in the local schools. As a result, the effective integration of ICT in school administration is hindered.

A BOM chair highlighted; *“We have made all necessary effort to ensure our school embark on the use of technology in its administration practices but a number of challenges raging from stakeholders who have low level of education. This has made it hard to integrate ICT fully in the school administration”*

However, the majority of BOM secretaries reported utilizing ICT in school management. Nevertheless, they encounter challenges in properly integrating technology into the administration due to differing levels of comprehension among school stakeholders.

One BOM Secretary stated that; *“I use ICT in the management of the office and staff operation only because I find great challenge while trying to incorporate it to the entire school administration as there some of aged teachers who have little knowledge on ICT use as well as the parents”*.

In addition, the majority of the PA chair observed that most parents had a limited understanding of ICT usage due to their poor educational attainment. They moreover said that the majority of schools in the region have not achieved the ability to engage parents in utilizing ICT, since many of them live below the poverty threshold. According to the majority of PA chairs, SMS and calls have been the predominant ICT modes of contact utilized by school administrators and parents.

A PA chairperson made a statement; *“many parents in our community are not well-informed about the use of information and communication technology (ICT). This is primarily because a large majority of the parents have a low level of education. Additionally, the majority of schools in our region have not yet reached the stage where they can fully involve parents in utilizing ICT. Many of the parents in our community are living below the poverty line, and therefore do not have access to the necessary resources to engage with ICT. From my discussions with other PA chairs, it is clear that SMS messages and phone calls are the most commonly used ICT communication methods between school principals and parents”*.

Also one of the QASO noted that;

“I have done a total of 20 school evaluations to ensure ICT usage is realized in my area of jurisdiction despite many challenges experienced in the most of the school”.

More so, one of the HODs stated;

“I do believe that using computers makes me a more effective teacher. Computers provide me with a wide range of resources and tools that help

enhance my teaching methods and engage students in a more interactive and meaningful way”.

Nevertheless, the majority of the Heads of Departments (HODs) identified the primary obstacles to computer usage in their schools as the insufficient availability of technological resources to cater to all pupils. This is due to the fact that not all students may possess a computer or have access to the internet in their homes, resulting in disparities in learning possibilities. As a result, it is necessary to maintain a balance in the extent of computer usage.

4.4.2 Inferential Statistics.

The researcher utilized the Pearson correlation to investigate the extent to which school principals employ information and communication technology (ICT) in the management of public secondary schools in Vihiga County. The results are succinctly presented in the table provided below.

Table 4. 3: Pearson Correlation Coefficient of the Study Variables

		ICT integration in the School administration	Use of ICT
	Pearson Correlation	1	
ICT integration in the School administration	Sig. (2-tailed)	.	
Use of ICT	Pearson Correlation	0.736	1
	Sig. (2-tailed)	0.001	

Table 4.3 displays the Pearson correlation coefficient of 0.736, indicating a robust positive link between ICT integration in school administration and the use of ICT. The connection is statistically significant at the 0.001 level, indicating a strong association between the integration of ICT in school administration and the utilization of ICT.

4.4.3 Discussion

In line with the discovery made in this research, the investigations conducted by Anyanful and Abdulai (2018) as well as Abraham and Bariyaa (2020) also concentrated on the utilization of ICT in the management of secondary schools. The researchers investigate the degree to which principals employ ICT tools and technology in their routine administrative duties. The studies recognize the difficulties and obstacles in using ICT in classrooms. They pinpoint reasons such as insufficient proficiency and understanding in information and communication technology (ICT), poor ICT resources and infrastructure, and limited assistance and training in ICT for school principals.

Nevertheless, this study specifically targeted Vihiga County in Kenya. The research conducted by Abraham and Bariyaa (2020) primarily examined the condition of rivers in Nigeria, whereas the study conducted by Anyanful and Abdulai (2018) concentrated on the Savulugu District in the Northern Region of Ghana. All the research investigate the utilization of ICT in various geographical situations, potentially leading to discrepancies in findings and conclusions. In addition, the study conducted in Nigeria offers a comprehensive examination of the obstacles and impediments to the adoption of information and communication technology (ICT), encompassing concerns related to infrastructure, funding, and policy support. Conversely, the study

conducted in Ghana primarily concentrates on the hindrance to ICT adoption posed by the limited availability of ICT facilities. This particular study amalgamates the potential findings from both studies.

4.4. Mobilization of ICT Infrastructure and ICT Integration in the administration

The study's second objective was to assess the impact of principals' efforts in mobilizing ICT infrastructure on the integration of ICT in school administration. The findings are displayed in table 4.4.

Table 4. 4: Mobilization of ICT Resources

Partners and stakeholders	Yes		No	
	N	%	N	%
Government	19	51.6	18	48.4
NGOs	11	30.6	26	69.4
PTA funding	15	40.5	22	59.5

The data in Table 4.4 displays the findings of a survey about the utilization of ICT resources. Among the 37 Board of Management secretaries included in the survey, 19 (51.6%) reported receiving government funds and gifts to facilitate the use of ICT in school administration. 11 respondents, accounting for 30.6% of the total, acknowledged utilizing ICT resources provided by NGOs. 15 respondents, accounting for 40.5% of the total, reported utilizing ICT tools from the parent-teachers association. This study aligns with Oluoch's (2016) research, which found that 84% of principals utilized NGOs to donate computers. Additionally, all principals (100%) reported engaging in negotiations with the Parent-Teacher Association (PTA) to authorize the use

of PTA funds for acquiring additional computers for school management. Furthermore, all principals (100%) agreed that their schools were intending to utilize parents' contributions to procure ICT facilities for the administration of public secondary schools.

4.5.1 Thematic Analysis of Qualitative finding on Mobilization of ICT

Infrastructure and ICT Integration in the administration

Regarding the mobilization of ICT infrastructure, the majority of the BOM chairpersons have acknowledged that the school board has been proactively mobilizing ICT resources for the purpose of integrating them into the administration of secondary schools. They further claimed that they had established alliances with community organizations that share their goal and values, involving them in collaborative fundraising initiatives to generate revenue for their schools. However, the majority of them observed that their schools have not attained the same level as more advanced institutions in terms of allocating funds for the mobilization of ICT resources. Moreover, the majority of them expressed that the allocation provided by the government is insufficient for improving ICT integration in their administration, mostly owing to the need for various infrastructure installations in the underdeveloped schools.

One secretary of the Board of Management claimed that;

“I have received grants and donations from education stakeholders and partners to facilitate the mobilization of ICT in the school. These grants and donations have enabled the school to set up ICT infrastructure, such as computers, internet connectivity, and digital learning resources. However, the infrastructure provided has not been adequate for integrating ICT into the

classroom setting and enhancing the learning experience for the students due to ever increasing school population”

A PA chair stated; *“Some of the outgoing parents have employed strategies such as identifying and accessing ICT resources donors and inviting them to donate in the school. However, although the action have been seen to add a significant impact in the school, some of the computers have not lasted for long due inappropriate man handling”*

Another QASO lamented that; *“although I have mobilized skilled personnel to facilitate the integration of ICT in the administration of schools in my area of jurisdiction, a number of schools staff, students, parents and some of other stakeholders have never taken the action serious”*.

In addition, most of the school HODs noted that their school ICT services are not assigned or centralized at departmental level. Therefore, ICT services are done at school level and the ICT resource mobilization at ICT/Technical department level.

4.5.2 Inferential Statistics.

The researcher utilized the Pearson correlation to investigate the impact of school principals' mobilization of ICT infrastructure on their integration of ICT in the administration of public secondary schools in Vihiga County. The results are succinctly presented in Table 4.5 below.

Table 4. 5: Pearson Correlation Coefficient of the Study Variables

		ICT integration in the School administration	Principals mobilization of the ICT Infrastructure
	Pearson Correlation	1	
ICT integration in the School administration	Sig. (2-tailed)	.	
Principals mobilization of the ICT Infrastructure	Pearson Correlation	0.594	1
	Sig. (2-tailed)	0.001	

The Pearson correlation coefficient between mobilization of the ICT infrastructure and ICT integration in the School administration is 0.594, as shown in Table 4.5. The correlation coefficient suggests a somewhat favorable association between the two variables. In addition, the p-value for this correlation coefficient is 0.001, which falls below the commonly accepted threshold of 0.05. This suggests that there is a statistically significant association between the variables.

4.5.3 Discussion

The research conducted by Oluoch (2016) and Ott et al (2018) acknowledges the importance of Information and Communication Technology (ICT) in improving the quality of teaching and learning in secondary schools. They emphasize the necessity for educators and school administrators to possess favorable dispositions towards information and communication technology

(ICT) and the significance of offering assistance and resources to enable its incorporation in education. This phenomenon is clearly demonstrated in the present study, as certain stakeholders establish connections with external stakeholders in order to secure funds and contributions related to information and communication technology.

Nevertheless, there are also discrepancies between the two articles. Oluoch's study primarily examined classroom questioning methods, whereas Mat et al investigated the overall use of ICT in school administration. In addition, Oluoch's research highlights the significance of teachers in utilizing ICT, whereas Mat et al's study concentrates on the function of administrators in facilitating the implementation of ICT infrastructure in schools. This research encompassed all the individuals and groups involved in the educational institution, with the aim of implementing information and communication technology (ICT) infrastructure in schools.

4.5. Accessibility to ICT Infrastructure and ICT Integration in the school administration

The study's third objective was to assess the impact of ICT infrastructure accessibility on the incorporation of ICT in school principals' administrative practices. The results are displayed in figure 4.7 and table 4.6 and 4.7 below. The statements in table 4.6 were scored as 4, indicating that they were available. Occasionally accessible 2. Scarce 1. Table 4.6 ratings were as follows: 5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree. Not available. The study's third objective was to assess the impact of ICT infrastructure accessibility on the incorporation of ICT in school principals' administrative practices. The findings are displayed in figure 4.7

and table 4.6 and 4.7 below. The statements in table 4.6 were scored as 4, indicating that they were available. Occasionally accessible 2. Scarce 1. Table 4.6 ratings were as follows: 5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree. Not available.

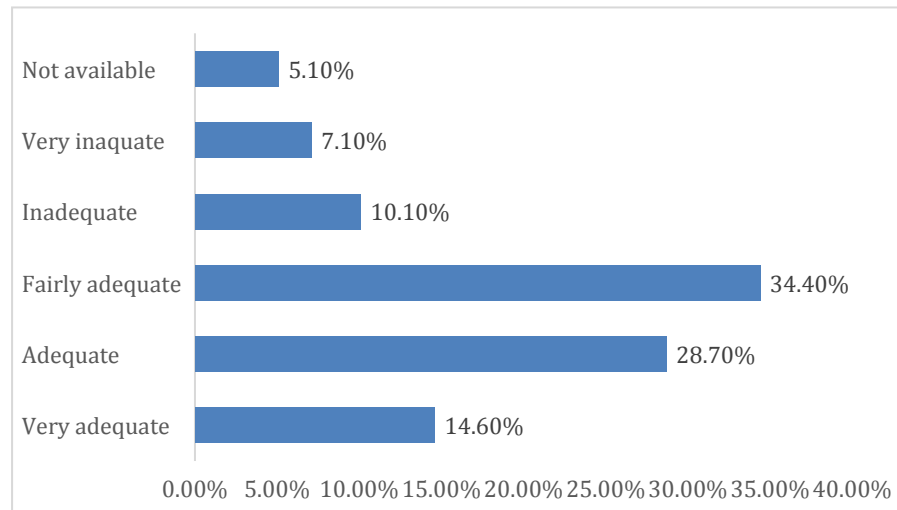


Figure 4. 7: Availability of ICT resources in School

According to Figure 4.7, 14.6% of the PA chairs who took part in the study stated that the availability of ICT resources is highly sufficient. 28.7% of schools indicated that the availability is sufficient. Approximately 34.4% of schools indicated that the availability is reasonably sufficient. 10.1% of schools indicated that the availability is insufficient. 7.1% of them indicated that the availability is highly insufficient. Finally, a total of 5.1% of schools indicated that they do not have access to ICT resources. This suggests that there were varying responses on the accessibility of ICT resources, which could be impeding their incorporation into the school administration.

Table 4. 6: Availability of ICT Infrastructure in school.

Statement	A		S		HA		NA		Mean	SD
	N	%	N	%	N	%	N	%		
Projectors	0	0	22	57.7	16	41.3	0	0	2.58	0.228
Desktop computers	4	10.3	8	21.6	22	57.8	4	10.2	2.22	0.234
Printers	9	24.4	11	27.8	13	35.4	5	12.4	2.85	0.264
Scanners	10	25.8	5	12.2	21	54.8	27	7.1	2.78	0.268
Laptop	23	59.7	5	12.6	11	27.7	0	0	2.83	0.271
Grand Mean									2.39	0.244

Table 4.6 displays the presence of ICT infrastructure in schools. Out of the respondents, 22 (57.7%) stated that projectors were occasionally available in their school, while 16 (41.3%) stated that they were rarely available. Regarding desktop computers, 4(10.3%) respondents reported that their school had them available, 8(21.6%) respondents reported occasional availability, and 22(57.8%) respondents reported limited availability. In relation to printers, 9(24.4%) respondents said that printers were accessible in their school, 11(27.8%) respondents reported occasional availability, and 13(35.4%) respondents reported limited availability. Regarding scanners, 10(25.8%) respondents said that scanners were present in their school, 5 (12.2%) reported occasional availability, and 21(54.8%) respondents reported scarce availability. Regarding laptops, 23(59.7%) respondents reported that laptops

are accessible in their school, whereas 5(12.6%) respondents reported occasional availability. These findings are consistent with those of Akhtar (2008) in a study conducted in Pakistan. Akhtar observed that a significant number of schools were unable to incorporate ICT into their teaching practices due to a lack of access to ICT resources. This scarcity of ICT infrastructure affected the majority of schools in the study.

Table 4. 7: Accessibility/barriers to ICT Resources in school

Statement	SA		A		D		SD		Mean	SD
	N	%	N	%	N	%	N	%		
Access to Internet	23	14.5	81	50.4	43	26.7	13	8.3	2.71	0.265
Access to power	0	0	84	51.7	77	47.3	0	0	2.54	0.229
access to computers	0	0	55	33.9	92	56.7	18	11.3	2.24	0.244
Access to rooms	0	0	25	15.4	92	56.7	46	27.9	1.86	0.261
Grand mean									2.41	0.247

The participants reported the accessibility and impediments to ICT resources in schools, as shown in Table 4.7. Regarding internet access, 23 individuals (14.5%) expressed strong agreement, whereas 81 people (50.4%) expressed agreement. The average score for this statement was 2.71, with a measure of how much the scores varied from the average of 0.265. Regarding access to power, 84 individuals (51.4%) acknowledged having access, while the remaining participants saw it as a hindrance. Regarding computer access, 55 individuals (33.9%) confirmed that they had access. With respect to computer rooms, 25 participants (15.4%) said that they had access, whereas 92 participants (56.7%) expressed a lack of access. The overall average for the

accessibility and obstacles to ICT resources in schools was 2.41, with a standard deviation of 0.247. On average, the participants indicated a moderate level of accessibility to ICT resources in their schools. This finding aligns with the research conducted by Suffer and Kihara (2019), which observed that access to information and communication technology (ICT) in educational administration has increased in developed schools and nations. However, in developing schools and countries, the integration of ICT in administration still lags behind.

4.6.1 Thematic Analysis of Qualitative Data on Accessibility of ICT Infrastructure and ICT Integration in the administration Resources.

Most of the BOM chair noted that the school they serve lacks sufficient ICT infrastructure as most of the school in the area have not lasted for many years, hence they are struggling in terms of the resources. Thus only a few well-established schools have a backup power supply installed.

One of the BOM Secretaries stated that; *“The school have computers but the most active computers are the one used in the accounting and school secretary office. However, other few computers available are insufficient to serve all other departments and the students in the school”*.

In addition, one of the PA chair noted that; *“There is no clear guidelines for the parents to reach out the school while they are away from school. Although the most outgoing parents call the principal when they want to inquire something from the school, most of the parent visit the school for services”*.

A QASO officer stated that; *“There is no skilled ICT personnel in the ministry of education employed specifically to move around the schools ensuring there*

is maintenance of the integrated ICTs in the school administration or repair of the faults computers but most of the schools outsource private skilled personnel to work on the computers”.

Most of the HODs stated that they rarely have access to school computers except when they are entering students’ results of which the action sometimes is done by the principal secretary.

4.6.2 Inferential Statistics.

The researcher utilized the Pearson correlation to determine the impact of school principals' access to ICT infrastructure on their integration of ICT in the administration of public secondary schools in Vihiga County, Kenya. The results are succinctly presented in Table 4.8 below.

Table 4. 8: Pearson Correlation Coefficient of the Study Variables

	ICT integration in the School administration	Accessibility to ICT infrastructure
Pearson Correlation	1	
ICT integration in the School administration	Sig. (2-tailed)	
Accessibility to ICT infrastructure	Pearson Correlation	0.683
	Sig. (2-tailed)	0.001

Table 4.8 displays the Pearson correlation coefficient utilized to examine the connection between accessibility to ICT infrastructure and ICT integration in the school administration. The findings indicated a robust and significant

positive connection between the two variables ($r = 0.683$, $p = 0.001$). This implies that schools with more accessibility to ICT infrastructure are more inclined to have more effective integration of ICT in their school administration.

4.6.3 Discussion

Both the research conducted by Nwana et al (2017) and Kavinya (2021) emphasize the significance of Information and Communication Technology (ICT) in the management and instruction of secondary schools. They acknowledge that information and communication technology (ICT) resources have a vital impact on advancing educational achievements and optimizing school administration. Both studies recognize the significance of possessing sufficient ICT infrastructure in educational institutions. They stress the need of schools having an adequate quantity of computers, internet access, and other ICT tools to facilitate teaching and administration. This study uncovers the information despite the limited availability of resources in the region under investigation.

The study conducted by Nwana et al (2017) specifically investigated the accessibility and usage of ICT resources in the context of teaching computer education. On the other hand, the study conducted by Kavinya (2021) explores the obstacles that impact the implementation of innovative simulation-based teaching and learning in medical laboratory science programs. This study specifically examined the realm of secondary education. Therefore, each study varies in terms of its scope and the specific field in which ICT is applied.

4.6 ICT Literacy and Integration of ICT in Administration

The fourth objective of the study was to examine the impact of school principals' ICT literacy on the incorporation of ICT in the management of public secondary schools. The researcher employed figures and words as markers of ICT literacy and utilized a Likert scale to quantify the rating given by respondents to each item. The findings are displayed in the figures and tables below.

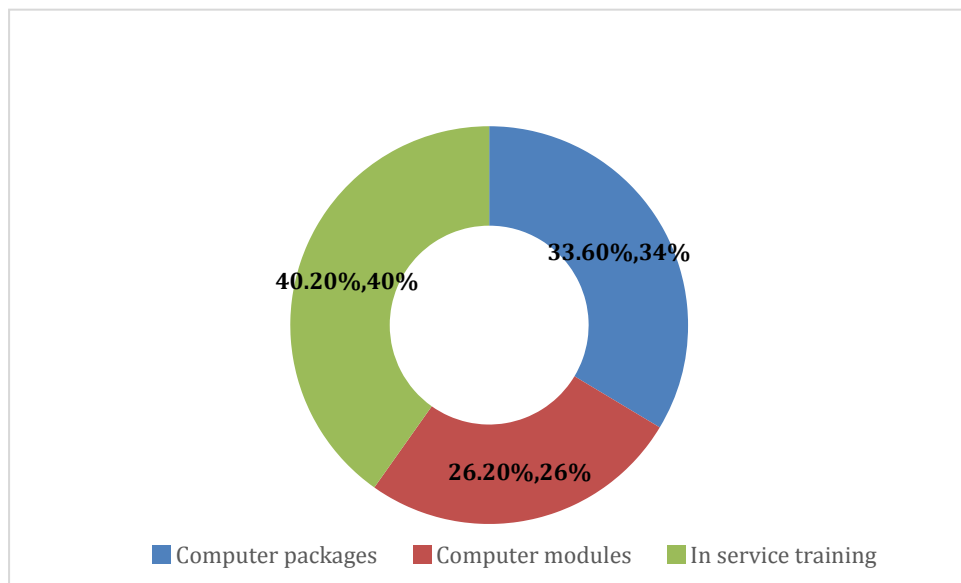


Figure 4. 8: ICT Training Received

Figure 4.8 shows that 33.60% of the BoMs Secretaries who participated in the study had received training in computer packages, 26.20% in computer modules, and 40.20% had received in-service training.

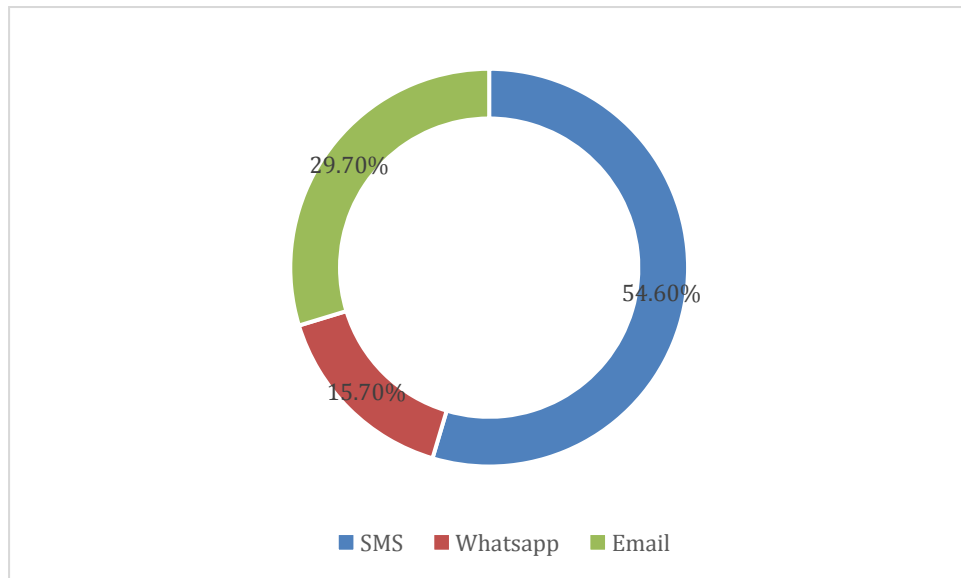


Figure 4. 9: Frequently used ICT mode of communication

The results in the figure 4.9 indicate that SMS is the most frequently used ICT mode of communication by the PA chairs, with 54.60% of respondents using it. WhatsApp is the second most used mode, with 15.70% of respondents using it while Email is the least used mode, with only 29.70% of respondents using it.

Table 4. 9: Level of ICT literacy

Statements	Very good		Good		Average		Poor		V- poor	Mea n	STD	
	N	%	N	%	N	%	N	%				
Microsoft word	30	24.3	33	26.3	50	40.2	30	24.3	3	23	35	1.363
Microsoft excel	9	7.3	9	25.7	45	36.2	36	27.6	4	33	33	1.375
Microsoft PowerPoint	10	7.9	35	28.3	46	36.8	24	19.1	7	53	315	1.482
Microsoft access	7	5.9	41	33.2	47	37.9	21	17.1	7	53	45	1.121
Microsoft publisher	10	7.8	35	28.4	49	39.5	23	18.4	7	53	57	1.431
Email & internet	17	13.6	32	25.9	45	36.1	22	17.2	9	73	236	1.802
Quick books	22	17.4	32	25.4	33	26.6	24	19.1	14	113	505	1.778
Photo shop	21	16.8	29	23.3	45	36.1	22	17.9	7	53	32	1.363
Page makers	33	26.3	27	21.7	43	34.3	16	12.5	7	53	392	1.906
Others	27	21.7	30	24.3	41	32.9	21	17.1	5	33	909	1.856
Grand Mean										3.37	1.631	

Table 4.9 shows the level of ICT literacy varies across different software programs. For Microsoft Word, 30 respondents (24.3%) rated their ICT literacy as very good, 33 (26.3%) rated it as good, 50 (40.2%) rated it as average. For Microsoft Excel, 9 respondents (7.3%) rated their ICT literacy as very good, 9 (25.7%) rated it as good, 45 (36.2%) rated it as average. For Microsoft PowerPoint, 10 respondents (7.9%) rated their ICT literacy as very good, 35 (28.3%) rated it as good, 46 (36.8%) rated it as average. For Microsoft Access, 7 respondents (5.9%) rated their ICT literacy as very good, 41 (33.2%) rated it as good, 47 (37.9%) rated it as average. For Microsoft Publisher, 10 respondents (7.8%) rated their ICT literacy as very good, 35 (28.4%) rated it as good, 49 (39.5%) rated it as average. For Email and Internet, 17 respondents (13.6%) rated their ICT literacy as very good, 32 (25.9%) rated it as good, 45 (36.1%) rated it as average. For QuickBooks, 22

respondents (17.4%) rated their ICT literacy as very good, 32 (25.4%) rated it as good, 33 (26.6%) rated it as average. For Photoshop, 21 respondents (16.8%) rated their ICT literacy as very good, 29 (23.3%) rated it as good, 45 (36.1%) rated it as average. For Page Makers, 33 respondents (26.3%) rated their ICT literacy as very good, 27 (21.7%) rated it as good, 43 (34.3%) rated it as average. For other software programs, 27 respondents (21.7%) rated their ICT literacy as very good, 30 (24.3%) rated it as good, 41 (32.9%) rated it as average. The finding concurs with the results obtained by Enu (2018) which noted that many teachers in public secondary schools have minimal ICT skills hence the poor ability to integrate them into teaching and learning processes. He added that low uptake of ICT by teachers is attributed to the limited knowledge and skills of teachers.

4.6.1 Thematic Analysis of Qualitative data on ICT Literacy and Integration of ICT in Administration.

As noted by the most of the BOM chair, most of the schools in Vihiga County don't have enough and skilled manpower to facilitate ICT integration. They also noted that constraints of the resources in the school have made the school management fail to budget for the action as seem have urge allocation including training of the staff on how to use the system among other expensive resources needed to do so. However, most of them noted that the school plan to have the system in future.

One of the BOM secretary stated;

“The ICT knowledge I have is just basic use of the computer in performing small normal task such typing and few task performed by the computer using Ms Officer. Still using those tool in performing some task becomes a challenge

when it comes to a certain software tools in designing and formatting documents in specified manner”

Another BOM secretary noted that;

“I learnt computer packages in the past but due to delegation of most my task to the secretary and other assistant staff, I find it a challenging to work with various computer software tool effectively.”

Further, one QASO asserted that;

“The TSC organizes various training programs and workshops to enhance teachers' ICT skills. These programs cover both basic and advanced ICT skills, ensuring that teachers have the necessary knowledge to effectively integrate technology into their teaching. Therefore, if all teachers can dedicate to this training then all school could be having enough ICT manpower”.

Most of the HODs were noted to have relevant ICT skills, especially the young ones. One of the HOD stated;

“I took my ICT training while I was in the university as my course had some computer units which we all undertook for the first and the second year”.

Another HOD noted;

“I took a class of computer packages before joining the University for my Undergraduate Degree and am capable of doing a number of things using computer even those that are beyond what I do in work as I continued to learn more personally using my laptop”.

4.6.2 Inferential Statistics.

The Pearson correlation was used by the researcher to examine how school principals ICT literacy influences school principals' integration of ICT in administration of public secondary schools in Vihiga County. The outcomes are summarized in the table below.

Table 4. 10: Pearson Correlation Coefficient of the Study Variables

		ICT integration in the School administration	ICT literacy
	Pearson Correlation	1	
ICT integration in the School administration	Sig. (2-tailed)	.	
ICT literacy	Pearson Correlation	0.745	1
	Sig. (2-tailed)	0.001	

Table 4.10 shows that there was a significant positive correlation between ICT literacy and ICT integration in school administration ($r = 0.745$, $p < 0.001$). This suggests that as the level of ICT literacy among teachers increases, so does the level of ICT integration in school administration.

4.6.3 Discussion

The research conducted by Enu (2018) and Nurhabibah et al (2018) recognize the significance of ICT in education and its capacity to improve the methods of teaching and learning in schools. Both findings emphasize the necessity of implementing efficient training and professional development programs for

teachers to enhance their ICT literacy skills. This study demonstrates that TSC has implemented ICT training programs and workshops to improve teachers' ICT skills.

The discrepancy in the studies lies in the fact that Enu (2018) primarily investigated the application of blended computer-based learning in pre-technical skills education, whereas Nurhabibah et al (2018) analyzed the ICT literacy ability of vocational high school instructors. The initial study focuses exclusively on Ghana and examines the proficiency of students in pre-technical abilities, whereas the subsequent study was conducted in Indonesia but does not provide details regarding the educational level being assessed. The scope of this study is limited to public secondary schools located in Vihiga County, Kenya.

CHAPTER FIVE

SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

5.1. Introduction

This chapter compiles the findings, conclusions, recommendations, and drives a paths for the future study.

5.2. Summary of the Study Findings

The study was conducted to examine the factors influencing the integration of ICT in the administration of public secondary schools in Vihiga County, Kenya. It focused on determining the principals' use of ICT in the administration of public secondary schools, school principals mobilization of ICT infrastructure on integration of ICT, influence of school principals accessibility to ICT infrastructure on ICT integration in the administration and to determine how school principals ICT literacy influences integration of ICT in administration of public secondary schools in Vihiga Count. Data was collected through questionnaires and interviews. Both quantitative and qualitative analysis methods were used to analyze the data. The finding of the study are discussed per objective as shown below.

5.2.1. Influence of Principals' use of ICT-on-ICT Integration in the Public Secondary School Administration.

Based on the survey results, it was found that there is a strong positive correlation between ICT integration in the school administration and the use of ICT. The correlation coefficient of 0.736 suggests a relatively high level of association between the two variables ($p=0.001$). This implies that the increase in the principals' use of ICT skills in performing their duties in school

significantly increases the level of ICT integration in the school administration. The findings of this study also coincide with those of Raby (2017) on ICT integration in public secondary schools in Uganda, the study indicated that principals' use of ICT aided decision making, planning, organizing, coordinating and evaluation in public secondary schools in Uganda and that principals managing big schools find it tough to run school activities due to high population without the use of ICT in administration.

5.2.2. Influence of Mobilization of ICT Infrastructure on the ICT Integration in the Public Secondary School Administration

The results of the survey revealed that there is a positive relationship between mobilization of ICT infrastructure and the ICT integration in the public secondary school administration in in Vihiga County, Kenya. The Pearson correlation coefficient between mobilization of ICT infrastructure and ICT integration in the school administration is 0.594, indicating a moderately positive relationship between the two variables. The p-value for this correlation coefficient is 0.001, which is statistically significant. Therefore, increasing the level of ICT infrastructure mobilization significantly increases the level of ICT integration in the public secondary school administration. This study coincides with that of Oluoch (2016) which established that 84% of the principals incorporated NGOs to donate computers, nearly all principals (100%) indicated they are negotiating with PTA to approve the use of PTA funds to purchase more computers for school management and all principals (100%) concurred that their schools were planning to use parents contributions to purchase ICT facilities for the administration of public secondary schools.

5.2.3. Influence of the Resource Availability on Integration of ICT in the Public Secondary School Administration

The study findings show that there is a strong positive correlation between accessibility to ICT infrastructure and ICT integration in the school administration ($r=0.683$, $p=0.001$). This implies that an increase in ICT infrastructure accessibility increases the integration of the ICT in the public secondary school administration. This suggests that schools with higher levels of accessibility to ICT infrastructure are more likely to have better ICT integration in their school administration. This results concurs with the findings obtained by Suffer and Kihara (2019) which noted that there is increase in the access to ICT in the administration of education in the developed schools and countries while in developing schools and countries ICT integration in administration still lags behind.

5.2.4. Influence of ICT Literacy on the ICT Integration in the Public Secondary School Administration

The study finding reveal that there is a positive correlation which was statistically ($r = 0.745$, $p < 0.001$) between ICT literacy and ICT integration in school administration. This suggests that as teachers' level of ICT literacy increases, the level of ICT integration in school administration also increases. The finding concurs with the results obtained by Enu (2018) which noted that many teachers in public secondary schools have minimal ICT skills hence the poor ability to integrate them into teaching and learning processes. He added that low uptake of ICT by teachers is attributed to the limited knowledge and skills of teachers.

5.3. Conclusions

In conclusion, the study found that there is a strong and significant correlation between ICT integration in school administration and factors such as the use of ICT by principals, mobilization of ICT infrastructure, accessibility to ICT infrastructure, and ICT literacy of teachers. This suggests that when principals have better ICT skills and use them in their duties, there is a significant increase in the level of ICT integration in school administration. Furthermore, when there is a higher level of mobilization and accessibility to ICT infrastructure in schools, there is also a significant increase in the integration of ICT in school administration. Additionally, as the ICT literacy of teachers' increases, there is a significant increase in the level of ICT integration in school administration.

5.4. Recommendations

Based on the conclusion of the study, several recommendations can be drawn to improve the integration of ICT in public school administration in Vihiga County.

Firstly, there is a need for increased ICT training and capacity enhancement for Heads of Departments in order to improve their understanding and skills in using ICT in their daily work. This can be done through professional development programs and workshops that focus on enhancing their ICT literacy and knowledge of technology tools that can be utilized in school administration.

Secondly, there is a need for increased investment in ICT resources in schools. As most BOM secretaries rely on grants and donations to mobilize ICT resources, it is important for government, NGOs, and parent-teacher

associations to continue providing support in this area. However, efforts should be made to ensure that the availability of ICT resources is consistent across all schools, as the study found mixed opinions on their availability.

Furthermore, efforts should be made to address the challenges that limit ICT integration in school administration. This includes improving infrastructure accessibility and connectivity, as schools with better accessibility to ICT infrastructure were found to have better integration in their administration. It is also important to address the limited resources and financial constraints that schools face in acquiring and maintaining ICT resources.

Lastly, the study emphasizes the importance of providing necessary support to facilitate ICT integration in schools. This can be done through partnerships with organizations that can provide technical support and guidance on ICT implementation. Additionally, ongoing monitoring and evaluation of ICT integration efforts can help identify areas for improvement and inform future interventions.

5.5 Suggestions for further research

1. This study suggest further research to focus on evaluating the effectiveness of professional development programs and workshops in enhancing the ICT literacy and skills of the teachers. This can involve measuring the impact of training on the use of ICT tools in school administration and assessing the long-term effects of capacity building initiatives.
2. Further research can also explore the availability and distribution of ICT resources in schools. This can involve conducting a comprehensive survey across all schools in Vihiga County to assess the current status of ICT resources and identify areas where additional support is needed. This research can also examine the impact of consistent availability of ICT resources on school administration practices.
3. Further, future research can delve into the specific challenges faced by schools in terms of infrastructure accessibility and connectivity. This can involve conducting a detailed assessment of the existing ICT infrastructure in schools and identifying strategies to address gaps in accessibility and connectivity. This research can also explore innovative solutions that can improve the infrastructure and connectivity situation in rural areas.
4. Further research can also focus on evaluating the impact of partnerships and support initiatives in facilitating ICT integration. This can involve conducting case studies on schools that have successfully integrated ICT in their administration with the help of external support.

The research can explore the specific types of support provided, such as technical assistance or funding, and assess their effectiveness in overcoming the challenges and barriers to ICT integration.

REFERENCES

- Abraham, L. N., & Bariyaa, J. (2020). Status of Principals' ICT Usage in Secondary School Administration in Rivers State. *African Research Review*, 14(1), 61-71.
- Alazam, A. O., Bakar, A. R., Hamzar, R., & Asmiran, S. (2012). *Teachers' ICT skills and ICT integration in the classroom: The case of vocational and technical teachers in Malaysia*. *Scientific Research*, 3(1), 70-76. DOI: 10.4236/ce.
- Behnam, A. (2019). *The effect of information and communication technology on learning level, improvement of teaching-learning process and information literacy*. Retrieved from <http://www2.atfmag.info/?p=2729>, [Persian].
- Cantoni L., & Danowski, J. A. (2015). *Communication and Technology*. In Cantoni L., & J. A. Danowski [Eds.] *Handbook of Communication Science*, Vol.5. Berlin, De Gruyter Mouton, Walter de Gruyter GmbH & Co KG.
- Carnoy, M. (2014). *Information communication technology in education possibilities and challenges: Inaugural Lecture of the UOC 2004- 2005 Academic Year 2004: Barcelona*. Retrieved from <http://www.uoc.edu/inaugural04/dt/eng/carnoy004.pdf>.
- Clarke & meyer. (2016). *Government Vision*. (A Presentation). Retrieved from <http://schools.becta.org.uk>.
- Enu, J., Nkum, D., Ninsin, E., Diabor, C. A., & Korsah, D. P. (2018). *Teachers' ICT skills and ICT usage in the classroom: The case of basic school teachers in Ghana* *Journal of Education and Practice*, 9(20), 35-38. Retrieved from www.iiste.org
- European Union(2017). *ICT in Education. Benchmarking Access, Use and Attitudes to Technology in Europe schools*.Belgium.Retrieved from <http://www.europeanschoolnet.org-www.eun.org>.

- Ghavifekr, S., Razak, A. Z., Ghani, M. F. A., Ran, N. Y., Meixi, Y., & Tengyue, Z. (2019). *ICT integration in education: Incorporation for teaching and learning improvement*. The Malaysian Online Journal of Educational Technology, 2(2), 24-45. Retrieved from www.mojet.net
- Kavagi, L. (2010). *ICT in School Education (Primary And Secondary)*. *ICT for Education in India and South Asia*. Pricewater House Coopers. Retrieved from <d:/doc/pwcpictures/200448196-001-11.jpg>
- Kavinya, M. (2021) *Factors Influencing The Integration Of ICT In Teaching and Learning. A Case Of Public Primary Schools in Kitui central Sub County, Kitui County, KENYA*
- Keplinger, (2003). An infant-based assessment of early lexicon acquisition. *Behavior Research Methods, Instruments & Computers*, 35(2), 302–309. <https://doi.org/10.3758/BF03202556>
- KICD (2017) *Basic education curriculum framework*. Government printer. <https://kicd.ac.ke/wp-content/uploads/2017/10/CURRICULUMFRAMEWORK.pdf>
- Kimuyu, D. N., Kalai, J. M. & Okoth, U. (2016). *Factors Influencing Principals' Integration of ICT in Administration of Public Secondary Schools in Kitui Central Sub County, Kenya. Unpublished M.ED Research Project, University of Nairobi: Nairobi*
- Kothari, C. R. (2014). *Research methodology: Methods and techniques* (3rd ed.). New Delhi: Wiley Publications.
- Kukali (2013). *Opportunities and challenges for use and integration of information communication technology in management of public secondary school in Bungoma South District, Kenya*. *International Journal of Science and Research*. 2(8) retrieved from <http://www.ijsr.net/archive/v2i8/MDUwNzmDE=.pdf>

- Mainai, J. (2016) *Head Teachers' Preparedness for Integration Of Information Communication Technology In Administration Of Primary Schools In Narok North Sub-County*; University of Nairobi
- Mastercard Foundation Scholars Program. *International Journal of Educational Development*. 2019 Nov 1;71:102089.
- Michalakis , Vaitis & Klonari A. *RouteQuizer-A Geocaching System for Educational Purposes*. In *CSEDU (2) 2017 (pp. 367-374)*.
- Ministry of Education National ICT Strategy for Education and Training*. Nairobi: Government Printers. (2005-2010). Kenya Education Structure support program. Nairobi: Government Printers. 80 (2013-2018). National Education Sector Support Program. Nairobi: Retrieved from, kenya.usaid.gov/sites.
- Mugenda, A., & Mugenda, O. (1999). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: Acts Press.
- Mugenda, O., & Mugenda, A. G. (2003) *Research Methods: Quantitative & Qualitative Approaches*. Nairobi: African Centre for Technology Studies. Mumtaz, S. (2000).
- Muriithi, N., & Crawford, L. (2017). *Factors Affecting Teachers' Use of Information and Communications Technology: A Review of the Literature*. *Journal of Information Technology for Teacher Education* 9 (3), 319. *Approaches for Project Management in Africa: Implications for International Development Projects*. *International Journal of Project Management*, 21(5), 309-319. "National ICT Policy." 2006.
- Musambai, E. A., Ndirangu, M., & Mukhwana, F. (2017). *Influence of ICT on the Quality of Educational Management in Secondary Schools in Kakamega County, Kenya*. In the *International Journal of Science and Technology*, Vol. 5, Issue 6, PP. 90-97
- Nwana, S. E., Ofoegbu, T. O., & Egbe, C. I. (2017). *Availability and Utilization of ICT Resources in Teaching Computer Education in*

Secondary Schools in Anambra State, Nigeria. Mediterranean Journal of Social Sciences, 8(5), 111-116. Doi: 10.1515/mjss-2017-0029

Nyanchoka,(2015). *Factors influencing principals' integration of information communication technology in administration of public secondary schools in Isinya sub-county, Kenya* (Doctoral dissertation, University of Nairobi).

Nyanchoka,(2017).*Factors Influencing Principal ICT Integration in Administration of Public Secondary Schools in Isinya Sub County, Kenya*. Unpublished Research Project: University of Nairobi: Nairobi.

Oluoch, D. A, Ajowi, J. O. & Bosire, J. (2015). *Factors Limiting the Usage of ICT in the Delivery of Management Services in Public Secondary Schools in Siaya County*. Baseline Survey Report for ICT in Selected Secondary Schools in Parts of Kenya Draft Report. Available on: www.gg.rhul.ac.uk/ict4d/Kenyaschools.pdf

Omotayo, A. O. (2015). *An Assessment of Level of Computer Literacy and Phobia among Private Secondary School's Principals in Kaduna North Local Government Area of Kaduna State, Nigeria*. Journal of Biology, Agriculture and Healthcare, 6, 18-27.

Republic of Kenya (2012a). *Sessional Paper No.14 of 2012 on realigning education and training to the Constitution of Kenya 2010 and Vision 2030 and beyond*. Ministry of Education Science and Technology. Nairobi. Kenya.

Republic of Kenya (2012b). *A Policy Framework for realigning education to the Constitution 2010 and Vision 2030 and beyond*. Ministry of Education.

Sharma, (2019). *Teachers' attitude towards integrating ICT in teacher education*. International Journal of Innovative Technology and Exploring Engineering, 8(8), 285-295.

Siddiqui, M. H. (2017). *Challenges of Educational Technology*. New Delhi: APH Publishing Corporation. Shahonya, E. (June 26, 2012).

Sulemana, A., Anyanful, V. K., & Abdulai, I. B. (2018). *The relationship between teachers' ICT knowledge and availability of ICT facilities in the junior high schools: A case study in the Savulugu District in the Northern Region of Ghana*. International Journal of Innovative Research & Development, 7(6), 7-10. DOI:10.24940/ijird/2018/v7/i6/JUN18006

Sutter & Kihara, A. (2019). *Determinants of successful implementation of digital literacy project in public primary schools in Baringo County, Kenya*. Journal of Entrepreneurship and Project Management, 4(1), 96-117. Retrieved from www.carijournals.org

UNESCO, (2011). In Planning and Changing Journal, vol.38, No. 3&4, PP.191-207 *Transforming Education: The Power of ICT Policies*. Paris: France Wanjala, M. M. S., Khaemba, E. N & Mukwa, C. (2011). *Significant Factors in Professional Staff Development for the Implementation of ICT Education in Secondary Schools: A Case of Schools in Bungoma District, Kenya*. In International Journal of Curriculum and Instruction Vol. 1(1), pp. 30- 42

UNESCO. (2014). *transforming education: The power of ICT policies*.

APPENDICES

Appendix (i): Letter of introduction

Makokha Philemon,

University of Nairobi,

Kikuyu Campus,

P.O.BOX 92,

Kikuyu.

Education County Director,

Vihiga County,

P.O.BOX 1453,

Maragoli.

Dear Sir/Madam.

RE; REQUEST TO CARRY OUT RESEARCH

In partial fulfillment of the requirement for the award of Masters of Education in Education Management and Policy studies of University of Nairobi, I hereby tender my request to carry out research on **a survey on factors hindering principals' integration of ICT in the administration of public secondary schools in Vihiga County, Kenya.**

I also wish to assure you that this questionnaire and interview schedules is to help me gather information mentioned above. The information you provide will not be used elsewhere other than for this research.

Yours Faithfully

Makokha Philemon (researcher)

Appendix (ii): interview schedule (BOM Chair)

Kindly answer the questions in the spaces provided

1. Use of ICT in administration of secondary schools.

- a. Is the school board doing enough to ensure there is ICT usage in school?

.....
.....
.....

- b. To what extent has the school integrated ICT in the administration?

.....
.....
.....

- c. How has the school board facilitated ICT use in the administration of school in the following areas;

In curriculum and instruction implementation

.....
.....
.....

.....In
student personnel management in administration of school human resource

.....
.....
.....

In staff personnel management in administration of school human resource

.....
.....
.....

In school community relationship

.....
.....
.....

- d. Which challenges do you encounter when facilitating ICT usage in secondary schools?

.....
.....
.....

2. Mobilization of ICT infrastructure in schools

- a. Is the school board mobilizing ICT resources for integration in the administration of secondary schools?

.....
.....
.....

- b. Which stakeholders and partners has the school board reached out for funds or donations?

.....
.....
.....
.....

c. Do you have budgetary allocation in school to facilitate mobilization of ICT resources?

.....

.....

.....

c. Is the government allocation for ICT integration in the administration of schools enough?

.....

.....

3. Accessibility to ICT infrastructure

a) Do you have enough ICT Infrastructure in school?

.....

.....

b) Rate the availability of the following infrastructure in school?

KEY: 4. Available 3. Sometimes available 2. Hardly available 1. Not available

Infrastructure	4	3	2	1
Projectors				
Desktop computers				
Printers				
Scanners				
Laptop				

c) Do you have stable power and internet to facilitate ICT integration in the administration of school?

.....
.....
.....Do you have a backup power supply?
.....
.....
.....

4. ICT knowledge and skills

a. Is the school having enough skilled manpower to facilitate integration of ICT?

b. Does the board have plans to hire a skilled personnel?

.....
.....

c. If yes, how many do you plan to hire?

.....
.....

d. Has the school allocated the budget to facilitate the hiring?

.....
.....

Appendix (iii): interview schedule (BOM Secretaries)

Kindly answer the questions in the spaces provided

1. Use of ICT in the administration of schools

a. Do you use ICT in the management of your school?

.....

b. What is your perception on ICT usage in school administration?

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

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

Perception	4	3	2	1
Curriculum and instruction implementation				
Student management				
Staff management				
Financial management				
Community relationship				

c. Has ICT improve your managerial experience from the above categories?

.....

d. Which challenges did you encounter when integrating of ICT in administration?

.....

2. mobilization of ICT resources in school

a. Have you received any grants or donations from education stakeholders and partners to facilitated mobilization of ICT in school?

.....
.....

b. Which education partners and stakeholders were involved?

Tick (√) where appropriate

Partners and stakeholders	Yes	No
Government		
NGOs		
PTA funding		

c. Which type of ICT infrastructure did they provide?

.....
.....

d. Were the provided infrastructure adequate for ICT integration in schools?

.....
.....

3. Accessibility to ICT infrastructure in school

a. Do you have computers in school?

.....
.....

b. Are all computers functional?

.....
.....

c. Are the functional computers integrated in the administration of the school?

.....
.....

d. Has the school principal been allocated computer in office?

.....
.....

4. Principal ICT literacy?

a. Have you attended any ICT training?

.....
.....

b. Which course were you taught?

.....
.....

c. Was the training relevant to your current line of work?

.....
.....

d. Which ICT training did you receive?

Please tick where appropriate

Computer packages

Computer modules

In service training

Appendix (IV): interview schedule (PA Chair)

Kindly answer the questions in the spaces provided

- **Use of ICT in the administration**

- a. Are parents informed of ICT use when communicating to schools?

.....
.....

- b. How frequent have you informed parents of the current ICT use in school?

.....
.....

- b. when contacting the parents, which ICT mode of communication do the principal frequently use? SMS () WhatsApp () Emails ()

- C .which technological device do parents mostly use when communicating to school management?

.....
.....

- **Mobilization of ICT infrastructure in the administration of schools by parents**

- a. Has the parent association taken any initiative to mobilize ICT resources in schools?

.....
.....

- b. Which strategies have they employed to mobilize resources?

.....
.....

c. Are the strategies successful?

.....
.....

• **Accessibility to ICT infrastructure**

a. Do parents have access to ICT when contacting the school?

.....

b. How easy can they access the using ICT School?

.....
.....

c. Are ICT resources available in school adequate to facilitate communication with parents?

.....
.....

d. How can you rate the availability of ICT resources in school?

Very adequate Inadequate

Adequate Very inadequate

Fairly adequate Not available

e. What is the main barrier of ICT access to schools? Rate from 1-5 where 1-strongly disagree and 5-strongly agree.

Internet

Power

Computers

Computer rooms

Appendix (v): interview schedule (QASO)

Kindly answer the questions in the spaces provided

- As a QASO, how many school evaluations have you done to ensure ICT usage is realized in your area of jurisdiction?

.....
.....

- During evaluations, do we have enough skilled personnel to integrate ICT in schools administration?

- As a quality assurance officer, have you mobilized for skilled personnel to facilitate the integration of ICT in the administration of schools in your area of jurisdiction?

.....
.....

- How frequently have you reviewed educational provisions to maintain and improve ICT access in school in the school administration?

.....

- From the ministry of education and TSC standpoint, what are the possible solutions for the challenges experienced in accessing ICT facilities in schools?

.....

Appendix (vi): Questionnaire (Heads of Department)

This research is meant for academic purposes. Kindly answer all questions as honestly and precisely as possible. Responses to these questions will be treated with utmost confidence. Please do not write your name or that of your school anywhere on this questionnaire. Put a tick (✓) where appropriate or fill in the required information in the space provided.

PART A: Demographic Characteristics

- 1. What is your gender? Male [] Female []
- 2. What is your age bracket? Above 50 years [],between 40-50 years [],between 30 – 40 years [],below 30years[]
- 3. Please indicate your level of education: Diploma [], bachelor’s degree [], post graduate [], others.....
- 4. Indicate your work experience: less than 5yrs [], 6 – 10 years [], 11-15 years [], 16 – 20 years [], 21 years and above []

5. PART B. Use of ICT in School administration

Do you use computer in your daily administrative work? Yes () No ().

a. When did you first use computer?

In school.....

During pre-service teacher training.....

.....

At home.....

Never

.....

Do you think use of computer makes you an effective teacher

.....

.....

- b. On the five-point Likert scale, how do you rate your attitude towards use of ICT in administration of school? Kindly tick appropriately.

5=strongly agree,4=agree,3=neutral,2=disagree,1=strongly disagree

Statement	Strongly agree	agree	Neutral	disagree	Strongly disagree
I like learning how to use computer					
I enjoy using computer					
Computers ensures efficiency in administration					
Computers are important administrative tools					
I manage information more effectively using ICT					
I manage human resource effectively using ICT					
ICT has enabled curriculum and instruction implementation					
I find computer use time					

consuming					
Is difficult for me to use computer					
I feel lost in the information age					

PART C: mobilization of ICT resources

a) Is your department have adequate ICT infrastructure?

.....
.....

b) What efforts have you made to mobilize ICT resources within the school?

.....
.....

c) Was the strategies used to mobilize resources successful?

.....
.....

d) Which ICT infrastructure were you able to get?

.....
.....

• **PART D: accessibility to ICT resources**

a) Do you have access to ICT infrastructure in school?

.....
.....

b) How easy do you access ICT within the school compound?

.....
.....

- f. From the ICT infrastructure below, which one do you easily access in school? Rate from 1-5 where 1-strongly disagree and 5-strongly agree.

Tick (√) where appropriate

	1	2	3	4	5
Accessibility to internet					
Accessibility to power					
Accessibility to computers					
Accessibility to computer rooms					

- c) From the ICT infrastructure indicated not easily accessed, which effort have you made to access them in future?

.....
.....

PART E: ICT LITERACY IN ADMINISTRATION

- a. Do you have any ICT training

.....
.....

Which areas were you trained?

.....
.....

Was the training relevant to your current area of work?

.....

.....

The following is a list of common computer programs available in school administration. Please tick (√) your proficiency in the following computer packages.

Computer packages	Very good	Good	Average	Poor	Very poor
Microsoft word					
Microsoft excel					
Microsoft PowerPoint					
Microsoft access					
Microsoft publisher					
Email & internet					
Quick books					
Photo shop					
Page makers					
Others					

FACTORS INFLUENCING PRINCIPALS' INTEGRATION OF INFORMATION COMMUNICATION TECHNOLOGY IN THE ADMINISTRATION OF PUBLIC SECONDARY SCHOOL IN VIHIGA COUNTY, KENYA.

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Akomo, Oluoch Dornela, Jack Odongo Ajowi, and Joseph Bosire DVC. "Factors Limiting the Usage of ICT in the Delivery of Management Services in Public Secondary Schools in Siaya County", *Mediterranean Journal of Social Sciences*, 2015.

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